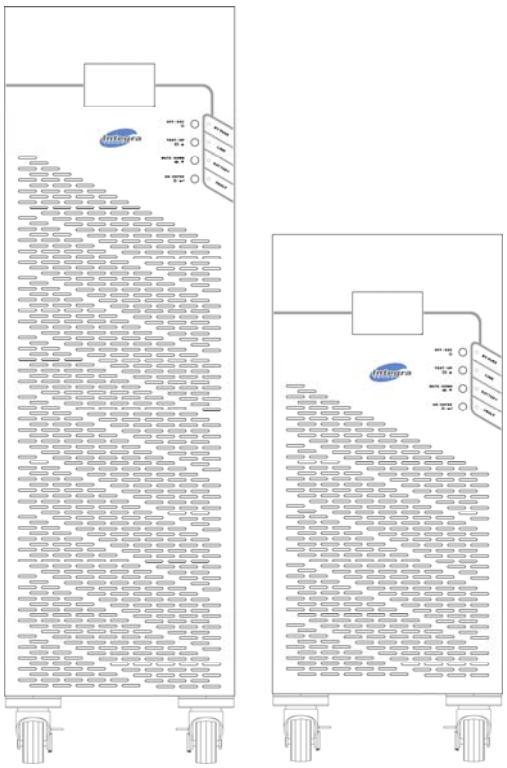
ENGLISH

ePRO 6K-10K 2Ph

USER MANUAL

2 PHASES 120Vac
ONLINE-DOUBLE CONVERSION UPS



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IMPORTANT

INPUT / OUTPUT CONFIGURATION

- This is a 2 Phases UPS: 2 phases input / 2 phases output. Nominal Line to Neutral Voltage is 120Vac.
- This UPS can work as 2 Phases UPS but also as 1 Phase UPS under following configurations:
  - 1PH input (120V L-N) & 1PH output (120V L-N)
  - 2PH input (120V L1-N; 120V L2-N) & 2PH output (120V L1-N; 120V L2-N)
  - 2PH input (120V L1-N; 120V L2-N) & 2PH output without neutral (208V L1-L2)
- Any other input/output configuration is not allowed. Any other configuration could generate error, alarms and even damages in the UPS.
  It is explicitly not allowed 1PH input & 2PH output mode. It is not allowed 2PH input & 1PH output.
- 1PH mode:
  When it is configured to work as single phase UPS it has to be specially configured for that. Input L1 and L2 must be connected using a jumper between L1-L2 at input terminal block and only one phase L1-N must be connected to UPS. Output L1 and L2 also must be connected using a jumper between them.
- 2PH mode:
  L1 and L2 must not be connected between them neither in input nor in output sides.
- This UPS generates 2 separate phases outputs + Neutral: L1, L2 and N.
  Output voltage is 120Vac from Line to Neutral
  Each output can only drives 50% of total UPS capacity.
  For example for a 6KVA UPS, output L1 (L1-N) will drive 3KVA and (L2-N) will drive 3KVA max.
- Outputs L1 and L2 can be used in separate way with individual maximum capacity of 50% each but also they can be connected in parallel to offer 100% total power in one output.

***** IMPORTANT WARNING *****

***** IF ONLY ONE 120Vac PHASE OUTPUT CONFIGURATION IS REQUERIED, THE UPS MUST BE CONFIGURED ALSO TO WORK WITH ONLY ONE PHASE INPUT. PLEASE FOLLOW TERMINAL BLOCK CONNECTION INSTRUCTIONS GIVEN IN THIS MANUAL.**

***** IF UPS WILL BE USED AS 2 PHASES UPS, JUMPERS J1 and J2 CONNECTED BETWEEN L1 and L2 IN INPUT AND OUTPUT TERMINAL BLOCK MUST BE REMOVED BEFORE MAKING ANY CONNECTION.**

- Line to Neutral UPS Output Voltage can be configured by front LCD panel. User can select one of the 5 available output voltage values as follow:

  100Vac;
  110Vac;
  115Vac;
  120Vac;
  127Vac

1. GENERAL SAFETY INSTRUCTIONS

WARNING: It is required to read and understand this manual. Follow all instructions given in this manual for starting up and operating this product. Only qualified technician must start-up, operate and maintain this product. Keep manuals as a guide for future consults.

WARNING: This product operates with dangerous voltages. It must be installed, operated and maintained ONLY by qualified technicians trained for this kind of products. Service personnel MUST know and understand very well all electric risks related to this product. UPS manufacturer or distributor will never be responsible for any accident produced by lack of knowledge or negligent practices at the moment of install, starting up or maintain this product.
UPS manufacturer or distributor is not liable for any damage that might rise from misusing this unit or defective installation.

WARNING: If you are not qualified technician do not try to install, operate or repair this product.

WARNING: Do not try to install, operate or repair this product if you are not accompanied by another qualified person able to offer first aid support in case of emergency or accidents.

WARNING: Internal area of this product is locked by screws. Do not try to access inside the UPS unless you are a qualified technician. UPS must be checked, repaired and maintained by qualified personnel only.

CAUTION!!: ELECTRIC SHOCK RISK

CAUTION: There are dangerous voltages in the UPS power outlets although the equipment is not plugged to power line.

CAUTION: Inside this equipment, due to internal batteries, there are ALWAYS dangerous voltages, thought the UPS is OFF and unplugged of power line.

CAUTION: There are dangerous voltages in DC (Direct Current) Capacitors. Please Check Capacitor location in Figure 8.4.1. Wait at least 10 minutes after turning off UPS before opening it to access inside.

DANGER: Power off UPS and unplugged it from AC Line before opening it to Access inside this unit.

CAUTION: Before starting the opening procedure, remove all jewelry and metallic objects such as: Rings, Watches, Bracelets, etc., because they could contact conductive parts and components inside the UPS and this might cause discharges and/or short circuits. Make sure using tools properly isolated to avoid electrical risks.

Transportation and Storage: Warnings and Recommendations

WARNING: This UPS must be transported only in its original package to be properly protected

WARNING: This equipment must be storage in dry and ventilated site, in upright position.

WARNING: Before storage this UPS, batteries must be recharged for 8 to 10 hours

WARNING: During long term storage UPS must be recharged periodically according to BATTERIES MAINTENANCE section:

WARNING: EQUIPMENT DISPOSAL

Out of service units: It is strongly recommended to dispose this piece of equipment according to valid directives in your country. At the moment of disposing all pieces need to be managed appropriately to avoid possible environmental damage or for some materials to be recycled.

Batteries: Do not throw it to fire (risk of explosion). Do not open the batteries, there are dangerous liquids inside

WARNING: BATTERIES MAINTENANCE

- Batteries capacity, in general (of all kinds), decrease with time and use.
- Our products contain high quality batteries only.
- Batteries useful life in our UPS is between 4 and 5 years, considering environment temperature under 25 ºC and optimal operational conditions. This time can be dramatically reduced by high temperature and other adverse operation condition.
- Batteries life expectancy may be also affected by other operation conditions such as electrical service quality as well as number and kind of equipments connected to UPS
- Batteries should be periodically tested to check capacity and assure and appropriate back up.

- To enlarge batteries life expectancy it is recommendable to fully discharge UPS one every 2 to 3 months
- During UPS storage recharge batteries according to the following table:

Storage Temperature	Recharging Frequency	Recharging Time
-25°C a +30°C	Every 4 months	During 6 hours
+30°C a +45°C	Every 2 months	During 6 hours

SAFETY STANDARDS

SAFETY:	IEC/EN 62040-1
EMI (Radiated):	FCC part15, Subpart B (Class A)
EMI (Radiated):	IEC/EN 62040-2 (Cat 3)
EMI (Conducted):	IEC/EN 62040-2 (Cat 3)
SURGE IMMUNITY	IEEE / ANSI C62.41 (Cat A & B)
EMS Power-Frequency Magnetic Field:	IEC/EN 61000-4-8 (Level 4)
EMS Low Freq. Signals:	IEC/EN 61000-2-2
EMS (ESD):	IEC/EN 61000-4-2 (Level 4)
EMS (RS):	IEC/EN 61000-4-3 (Level 3)
EMS (EFT):	IEC/EN 61000-4-4 (Level 4)
EMS (SURGE):	IEC/EN 61000-4-5 (Level 4)
EMS (CS):	IEC/EN 61000-4-6 (Level 3)
TRANSPORTATION:	ISTA 1A

This product has been designed to operate in industrial and commercial applications. If it is used in different application some considerations for avoiding interferences could be necessary.

2. AVAILABLE MODELS

6K-EX 2Ph & 10K-EX 2Ph

UPS with internal batteries and connection for external battery cabinets to increase backup time.

EX: Indicates connection for external batteries
2PH: Indicates 2 Phases product.

Model	Internal Batteries	Ext. Batt. Connector	Isolation Transformer
6KEX / 10KEX 2Ph	Y	Y	No

EXTERNAL BATTERIES

2Ph models can operate with internal batteries but if extended backup time is required external batteries can be connected to UPS.

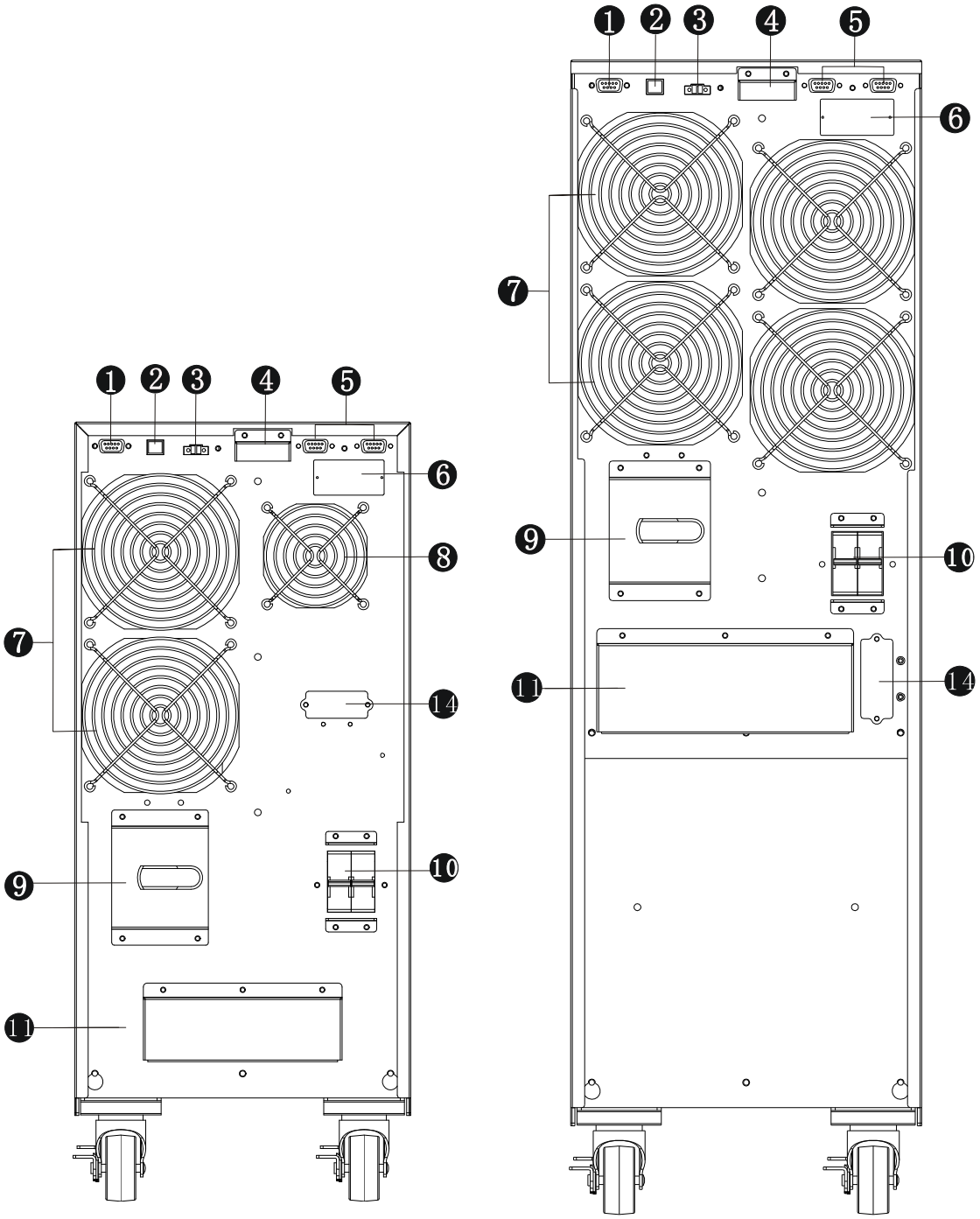
External Battery Cabinet for 6K / 10K 2Ph:
Model: EX-BAT-T6/T10 2PH
Batteries: 40 pieces x 12V-9AH: 4 groups of 10 batteries in parallel.
DC Voltage: 120Vdc

WARNING

External battery packs for 2PH models is not compatible with other 6K / 10K models. UPS 6K and 10K 2Ph require 120Vdc external battery packs.
Some other 6K and 10KVA models require 240Vdc external battery packs.
Make sure you will connect compatible external battery pack to your UPS to avoid permanent damages not covered by warranty.

REAR PANEL

1.- RS232	7.- FAN (ventilación Forzada)
2.- USB	8.- FAN charger (ventilación Forzada del cargador)
3.- EPO (Emergency Stop / Parada Emergencia)	9.- MBS (Bypass Switch / Interruptor Bypass)
4.- Share Current (for parallel UPS / para UPS paralelas)	10.- AC Input Breaker / Breaker Entrada AC
5.- Parallel Port (for parallel UPS / para UPS paralelas)	11.- Terminal block cover / Tapa Regleta Conexiones
6.- SNMP	14.- EXBATT connector / Conector Baterías Externas



3.- UPS INSTALLATION: SITE PLANING

SAFETY INSTRUCTIONS

WARNING: Before revising this section you must read and understand very well section 1 of this manual: "GENERAL SAFETY INSTRUCTIONS".

WARNINGS, RECOMMENDATIONS AND LIABILITY LIMITATION

REACH AND LIABILITY LIMITATION: The preparation of the site, wiring and all protection devices must be supplied by end user and it will not be responsibility neither the UPS distributor nor the UPS technician in charge of the start-up.
The place will be conditioned be end user or electrical contractor and must fulfill with local normative and directives and UPS technical requirements.
This manual describes minimal conditions and technical requirements with which the site must accomplish.
Directives and requirements described in this manual, do not pretend to substitute in any way local electrical directives or normative.
In some cases, local directives or regulations might be more exigent than UPS technical requirements described by this manual. In that case end user electrical contractor must be sure to comply with all related local electrical regulations and directives.

WARNING: Power lines must be protected by protection devices against over current (breakers) or leak currents with capacity and technology appropriate to effectively accomplish its function. Moreover, installation grounding must be correct.
WARNING: Install the UPS in well ventilated locations and leave room enough between UPS and close objects and structures
WARNING: Do not connect to UPS equipments or devices that exceed its capacity, this would overload the UPS.
WARNING: This product has been designed to be used indoors protected from water, direct sun light, dust and extreme temperature.
WARNING: Do not put any object on the UPS; do not apply any force over UPS. Do not cover UPS ventilation.
WARNING: This UPS must be connected to appropriate electrical service according to selected model. Technical specs sticker in the UPS shows the UPS power ratings. DO NOT connect this UPS to any of its own power outlets, this could damage the unit permanently.
WARNING: Do not connect AC motor based equipments without a careful sizing of the UPS based on inrush current instead of average current. Inrush current typical of motor based system could overload this UPS.

SITE INSPECTION AND INSTALLATION CONDITIONS

REGULATIONS AND LEGAL DIRECTIVES

It is necessary to check that installation site, wiring and power protection in the installation supplied by end user, fulfill technical parameters required by UPS.
A particular installation might accomplish with UPS requirements but not with local directives and regulations.
The end user and/or electrical contractor will be responsible of watching for complying with electrical regulations and normative during electrical installation managed by end user.
Inspection performed by installation technician is not intended to confirm regulations and directives accomplishing but only with technical needs for optimal UPS operation.

SITE INSPECTION

- During transport of this UPS from a cold place to a warmer and more humid one, some condensation could be generated. Leave the UPS for at least 2 hours to climate to new installation site.
- Do not install the UPS outdoors or near water sources nor in wet environment
- Do not install the UPS in sites exposed to sun light or heat sources. Temperature at operation site should never rise over 35 ºC. Batteries' life shortens over 25 ºC.
- Installation site must be dry, fresh, free of dust, fibers and any other objects (conductors or not) suspended in the air that could get into the UPS thru the ventilation system (Fan).
- Do not block UPS ventilations

UPS INPUT AND OUTPUT POWER LINES PROTECTION

AC LINES PROTECTIONS DEVICES:

All UPS Inputs and outputs must be protected by circuit breakers and current leak protections. Protection capacity and type must fulfill local regulations as well as directives from this manual. Grounding must be according to local directives as well.

DC PROTECTIONS DEVICES:

For Ex models (with external batteries) there must be also DC Circuit Breakers between UPS and battery bank.
Some Models include a DC breaker on the rear panel for external battery pack protection; otherwise an external DC Circuit breaker must be installed.

MATERIALS AND ELECTRICAL DEVICES

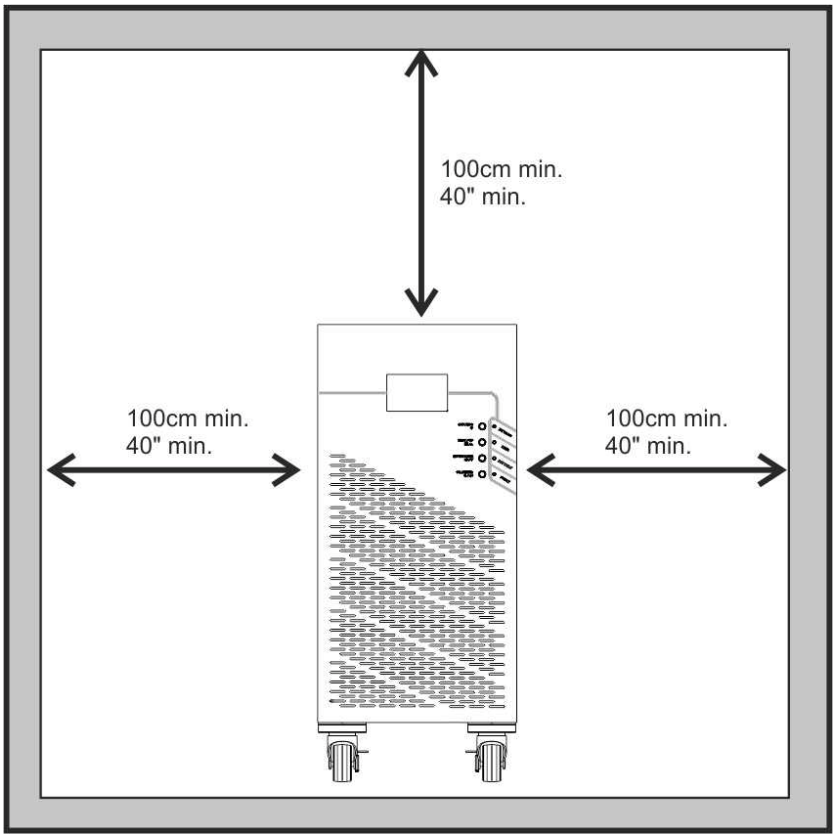
WARNING: Verify that all electrical lines involved in installation are open circuits and free of dangerous voltages before starting inspection tasks. All switches related to these electrical lines must be in **"OFF"** position before starting UPS installation. After disconnecting power from electrical lines involved in installation, check again with a digital voltmeter that are free of dangerous voltages.

IMPORTANT: Warning label must be placed on primary involved circuit breakers to alert there are maintenance personnel working on these circuits to avoid accidental actuation on involved breakers.

TOWER UPS INSTALLATION

SITE CONSIDERATIONS

* This product has been designed to be used indoors, protected from water, direct sun light, dust and extreme temperature.
* Install the UPS in well ventilated location or air conditioned room. Temperature must be always in acceptable range according to technical specifications table of this manual. It is strongly recommendable controlled room temperature between 21ºC to 24ºC for longer battery and UPS life.
* There must be minimum 1 meter free room distance between UPS and any wall or object. It will allow better ventilation and it will allow service UPS when required.
* Do not put any object on the UPS; do not apply any force over UPS. Do not cover UPS ventilation.



ELECTRICAL REQUIREMENTS (MANDATORY)

* All Power lines must be protected by magneto-thermal protection devices against over current (breakers) with capacity and technology appropriate to effectively accomplish its function as indicated in this manual. Moreover, installation grounding must be correct.
* This UPS must be connected to appropriate electrical service according to selected model. Technical specs sticker in the UPS shows the UPS power ratings. DO NOT connect this UPS to any of its own power outlets, this could damage the unit permanently.
* Connect only computer related equipments to this UPS. DO NOT connect medical equipments or critical availability equipments to this UPS. DO NOT connect AC motor based equipments. DO NOT connect home appliances (ovens, vacuum cleaners, refrigerators, etc.) to this UPS.

CIRCUIT BREAKERS AND WIRING SELECTION

Breakers and Gauge of the wires used in the installation must be rated to drive current values as indicated in below tables. NOTE every country could have local electrical requirements and regulations. If local electrical regulations require higher rates than values suggested in this section please follow local directives.

1 PHASE:

	1 PHASE INPUT	1 PHASE OUTPUT	EXT. BATT
MODELO	**L1-L2 in Parallel 120Vac**	**L1-L2 in Parallel 120Vac**	**Ext. Batt. 120Vdc**
6KVA 2Ph	8AWG or thicker 63 Amp (curve D)	8AWG or thicker 63 Amp (curve D)	10AWG or thicker 50 Amp (curve C)
10KVA 2Ph	6AWG or thicker 125 Amp (curve D)	6AWG or thicker 125 Amp (curve D)	10AWG or thicker 50 Amp (curve C)

2 PHASES:

	2 PHASES INPUT		2 PHASE OUTPUT		EXT. BATT
MODELO	**L1-N 120Vac**	**L2-N 120Vac**	**L1-N 120Vac**	**L2-N 120Vac**	**Ext. Batt. 120Vdc**
6KVA 2Ph	10AWG or thicker 32 Amp (curve D)	10AWG or thicker 32 Amp (curve D)	10AWG or thicker 32 Amp (curve D)	10AWG or thicker 32 Amp (curve D)	10AWG or thicker 50 Amp (curve C)
10KVA 2Ph	8AWG or thicker 63 Amp (curve D)	8AWG or thicker 63 Amp (curve D)	8AWG or thicker 63 Amp (curve D)	8AWG or thicker 63 Amp (curve D)	10AWG or thicker 50 Amp (curve C)

IMPORTANT: When using 2 separate outputs, each individual output drives only 50% of total UPS capacity. For example: for 6KVA UPS, Max. output #1 is 3KVA and Max output #2 is 3KVA.

IMPORTANT: Before connecting 2 outputs in parallel is mandatory to check both outputs are in phase (0º). This parameter is configured through menu by LCD and front panel. Check installation section in this manual.

IMPORTANT: If external battery cabinets are connected to UPS, it is necessary to install one DC breaker between UPS and each external battery cabinet. Original External Battery cabinets normally include its own input breaker.

WARNING: *The correct wire gauge or section is strongly affected by diverse factors such as: Operation temperature, wire length, type of wire and kind of installation. UPS user and/or his electrical contractor must assure an appropriate selection for wire and protection devices for complying with local regulations and directives for electrical installations.*
Wiring colors must be selected according to local directives and regulations

LEAK CURRENT PROTECTION

In many countries, now a day, it is legally required to install protections against current leakage to protect human beings in cases of leaks o discharges to ground. It is responsibility of the end user and/or electrical contractor selecting and including these protection devices in the electrical circuit of the UPS.

4.- UPS INSTALLATION: SINGLE UPS - TERMINAL BLOC

AC LINES CONNECTION PROCEDURE

- **Make sure the UPS is Off before starting the installation.**
- **Remember to check all wires to be connected are not powered (including external batteries).**

UPS terminal block preparation

Remove cover of terminal block at the UPS rear panel, identified as 12 in rear panel section of this manual
DO NOT use a wall power outlet to plug UPS to AC Line as usually ratings of this kind of outlets are not enough to power 6KVA UPS. UPS Input wire must be connected by breaker protected line to electric panel board.

UPS Input and Output Connection

Connect input and output ground wires to proper place on the UPS chassis on both sides of terminal blocks. Ground wires must be FIRST to be connected and LAST to be disconnected.
Connect UPS input and output wires according to your UPS model or configuration as described in following figures:

AVAILABLE CONFIGURATIONS

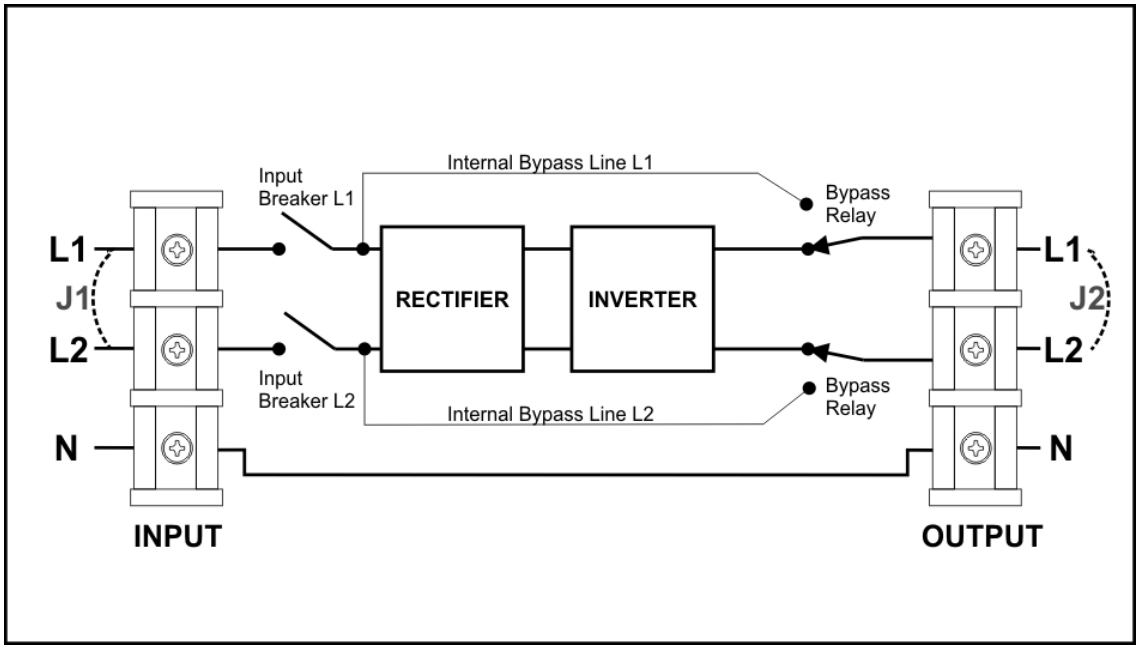
This equipment can offer 3 different connection configurations:

1.- One Phase Input 120Vac – One Phase Output 120Vac:
1 x Input Line to Neutral Voltage: 120Vac
1 x Output Line to Neutral Voltage: 120Vac

2.- Two Phases Inputs 120Vac – Two Phases outputs 120Vac:
2 x Input Line to Neutral Voltage: 120Vac
2 x Output Line to Neutral Voltage: 120Vac

2.- Two Phases Inputs 120vac – One Phase output 208Vac:
2 x Input Line to Neutral Voltage: 120Vac
1 x Output Line to Neutral Voltage: 208Vac

SIMPLIFIED INTERNAL BLOCK AND AC TERMINAL BLOCKS



WARNING

If UPS will work in 1phase input - 1 phase output configuration, output L1 and L2 must be connected by a jumper (J2) in output terminal block. Under this configuration inputs L1 – L2 MUST be connected with a jumper (J1). If not, under bypass mode, input L1 and L2 will be short-circuited.
Additionally functions 03 and 04 in LCD front panel MUST be revised and properly configured. Check terminal block configuration in this section.

WARNING

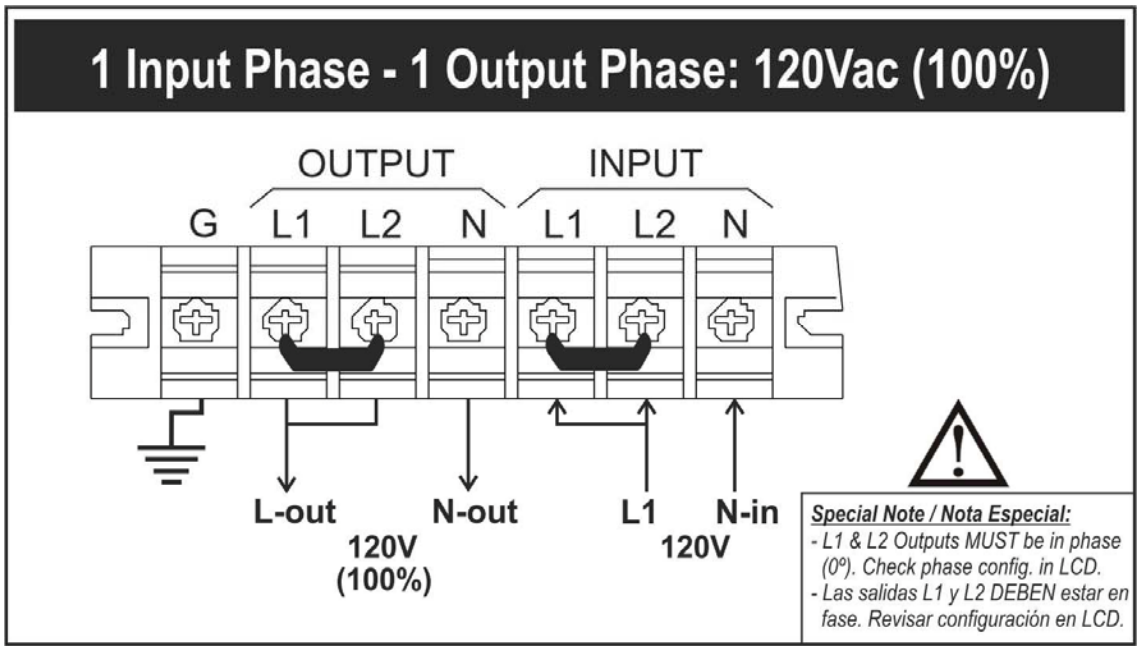
Configurable functions 03 and 04 of the configuration menu available on LCD must be revised and properly configured according to the output mode selected.
Revise Installation section and Configuration section of this manual.

WARNING

WRONG INPUT OR OUTPUT CONNECTION MAY PRODUCE PERMANENT DAMAGE OF THIS PRODUCT OR YOUR SYSTEM. THIS KIND OF DAMAGE IS NOT COVERED BY THE WARRANTY.

CONFIGURATION 1: UPS 1Phase (1 Input 120Vac - 1 Output 120Vac)

**** 1 phase output can supply 100% of total UPS capacity.**


1 Input Phase - 1 Output Phase: 120Vac (100%)
OUTPUT
INPUT
G L1 L2 N L1 L2 N
L-out
120V
(100%)
N-out
L1
120V
N-in
Special Note / Nota Especial:
- L1 & L2 Outputs MUST be in phase (0º). Check phase config. in LCD.
- Las salidas L1 y L2 DEBEN estar en fase. Revisar configuración en LCD.

WARNING:
***** To connect 2 outputs in one phase output we must be sure phase angle between outputs is 0º and only 1 phase line must be connected at UPS input. Please follow below procedure:***

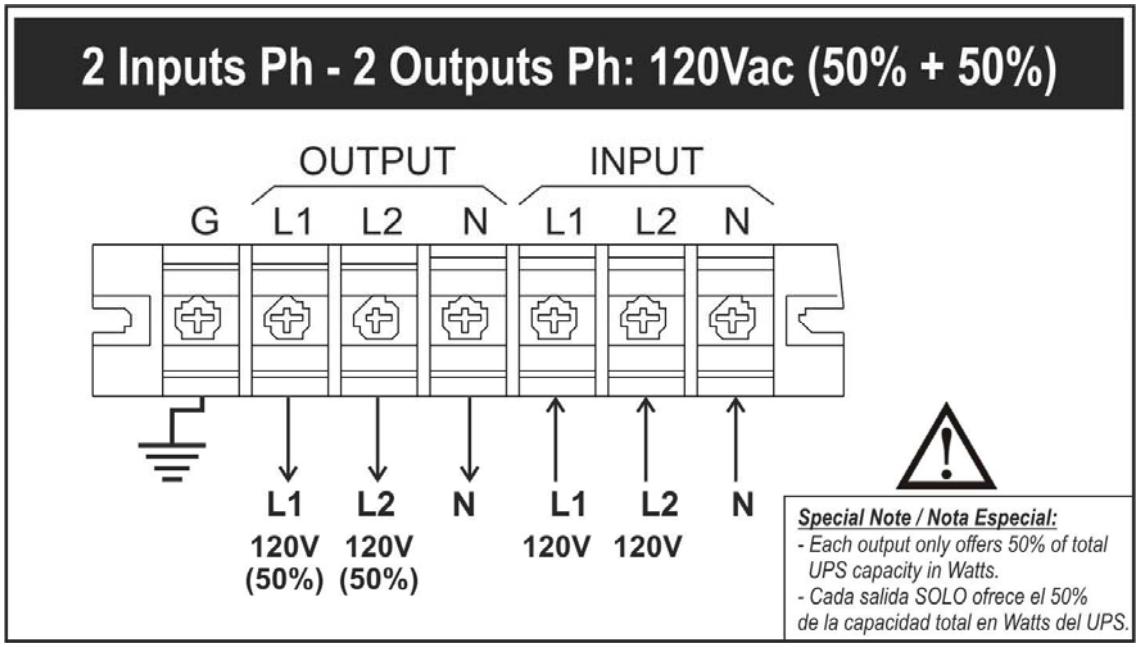
MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE

1.- Make sure L1 and L2 terminals at input terminal block are connected with a jumper.
2.- UPS must be connected to one phase input line only.
3.- Check to confirm function 03 in LCD panel is configured as "ATO" (automatic mode). In this mode, inverter output will follow input phase. Phase angle read by UPS must be 000 in function 03 screen. "ATO" is factory preconfigured value.
4.- Check to confirm function 04 in LCD panel is configured as "ENA" (Enabled). If not, error alarms 1A and 1B will be generated by the UPS. Note: "ENA" is the factory preconfigured value.

***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

CONFIGURATION 2: UPS 2 Ph (2 Input 120Vac - 2 Output 120Vac)

**** Each output can supply only 50% of total UPS capacity.**


2 Inputs Ph - 2 Outputs Ph: 120Vac (50% + 50%)
OUTPUT
INPUT
G L1 L2 N L1 L2 N
L1 L2 N L1 L2 N
120V 120V
(50%) (50%)
120V 120V
Special Note / Nota Especial:
- Each output only offers 50% of total UPS capacity in Watts.
- Cada salida SOLO ofrece el 50% de la capacidad total en Watts del UPS.

WARNING:
To use this UPS as 2 phases UPS is MANDATORY to check there is NO jumpers connected between L1 and L2 at Input and output terminal block. You must follow below instructions:

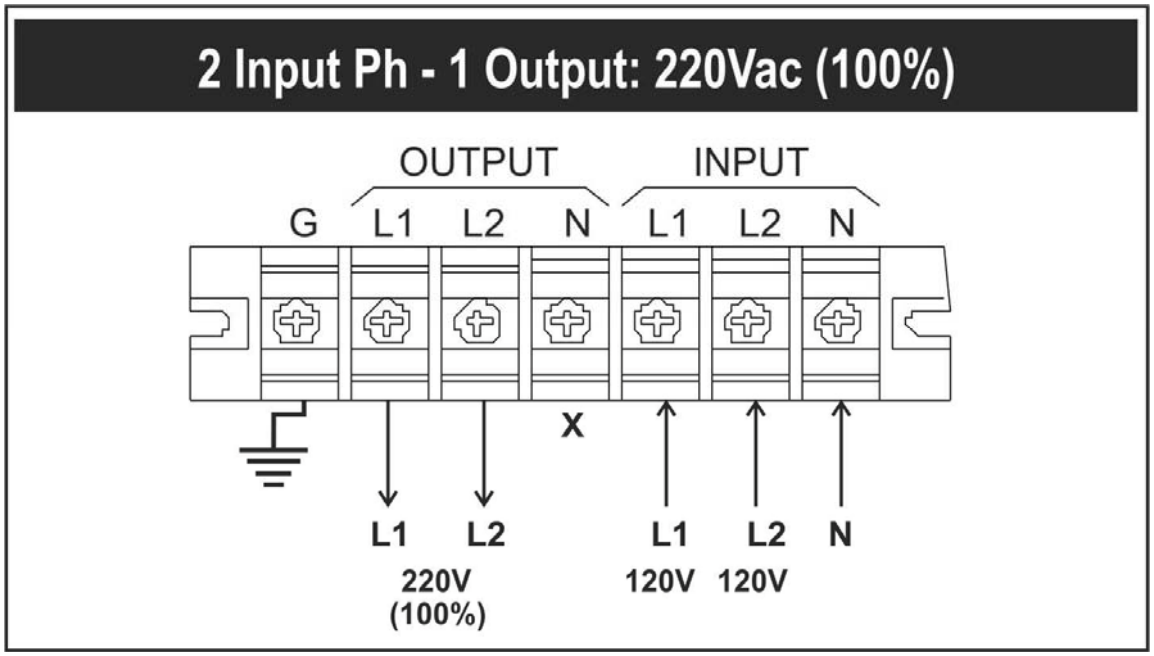
MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE

1.- Remove all jumpers between L1 and L2 at input and output terminal block.
2.- You MUST confirm Configuration MENU 03 and 04 in LCD panel are configured as follows:
2.1- Configuration MENU 03 must be set as "ATO" (automatic mode): Output phase angle is same than input phase angle. In normal conditions angle phase between separate phases is 120º.
2.2- Configuration MENU 04 is not available under this mode. It is indicated as RESERVED. Since UPS detects input has been wired as 2 separate phases, output cannot be configured as 1 phase output.

***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

CONFIGURATION 3: UPS 2 Ph (2 Input 120Vac - 1 Output 208Vac)

**** 208Vac output can supply 100% of total UPS capacity.**



WARNING:
To use this UPS as 2 phases UPS is MANDATORY to check there is NO jumpers connected between L1 and L2 at Input and output terminal block. You must follow below instructions:

MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE

1.- Remove all jumpers between L1 and L2 at input and output terminal block.
2.- You MUST confirm Configuration MENU 03 and 04 in LCD panel are configured as follows:
2.1- Configuration MENU 03 must be set as "ATO" (automatic mode): Output phase angle is same than input phase angle. In normal conditions angle phase between separate phases is 120º.
2.2- Configuration MENU 04 is not available under this mode. It is indicated as RESERVED. Since UPS detects input has been wired as 2 separate phases, output cannot be configured as 1 phase output.

***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

SPECIAL CONFIGURATION FOR 2 ALTERNATIVE INPUT SOURCES

POWER GENERATORS WITH OUTPUTS AT 180º

There are some applications where 2 different input sources are used to power to the UPS. Main input source is usually AC Utility and Auxiliary source could be a motor-generator. Main AC Utility offers a 120º phase shift between R, S & T phases but sometimes auxiliary sources supply phases shift different to 120º, for example there are some 2 phases motor-generators with 180º phases shift. Some other times, 3 phases motor-generators are used but phases connected to UPS are not consecutive so phases shift is different to 120º UPS is expecting.
In those cases, when input goes from Main Utility to Auxiliary Source, UPS detects a phase shit change and depending on configuration of function 03, an alarm 39 could be generated and UPS could go to battery mode to protect connected load against a not adequate phases shift.

Usually factory setting allows UPS to generate 2 output lines with same phases shift than detected at input side. This is done by Function 03 set as ATO (Automatic). Under this configuration, UPS will not allow changes in input phases shift so if this situation is detected alarm 39 will be generated and UPS will go to battery mode.

If 2 alternative input sources with different phases shift will be used, UPS must be configured with MENU 03 as CP (Constant Phase) instead of ATO (Automatic Phase detection). CP means UPS will fix output phases shift to a desired value no matter what happens at the input. Under this setting UPS will allow changes input phases shift without generating alarms.

IMPORTANT NOTE:
Since under CP setting, input and output phases shift could be different, UPS will not be able to accept BYPASS modes. BYPASS will be immediately disable by UPS when MENU 03 is set as CP. Any external BYPASS devices must be removed by user to avoid potential short-circuits between UPS input and output.

Example of how to configure FUNCTION 03 for accepting 2 different input sources with different phases shift:

MENU 03 = CP 120º
This configuration will force UPS outputs to be shifted 120º in phase, no matter the phase of the inputs. In that way UPS will manage any phase angle change at input without generating alarm 39.

**** Deeper instructions to configure UPS in configuration section of this manual.**

EXTERNAL BATTERY CABINETS – CONNECTION PROCEDURE

UPS Tower type

WARNING

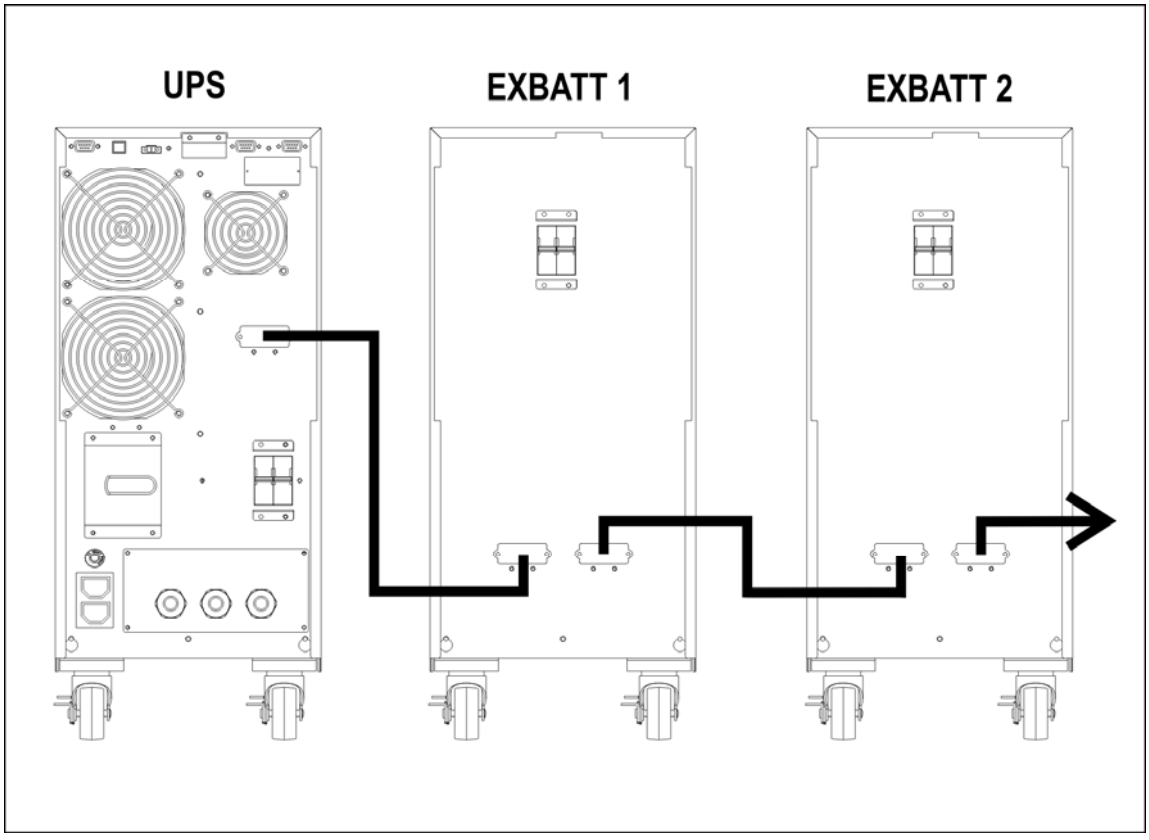
Make sure EXBATT model to be connected is compatible with UPS model. For 2Ph 6K and 10K UPS models, battery pack voltage is 120Vdc Measure and verify DC voltage supplied by battery pack before making connections.

1.- Check all DC breakers are in OFF position

2.- Remove all DC connector covers in UPS and EXBATT cabinets

3.- Using appropriate cable (supplied with the EXBATT) connect UPS with EXBATT 1. In case of more than 1 EXBATT connect EXBATT 1 with EXBATT 2 and so on until last EXBATT.

4.- Activate DC breakers one by one in EXBATT cabinets to connect EXBATT batteries with internal UPS Main batteries.



5.- UPS INSTALLATION: PARALLEL UPS - TERMINAL BLOCK

GENERAL COMMENTS FOR PARALLEL SYSTEMS

*** 6K y 10KVA models allow installation of up to 3 units in parallel.**
*** Units to work in parallel must be connected as indicated in this section.**
*** Parallel system must be configured and started up according to instructions given dedicated section of this manual.**
*** Any mistake in connection, configuration or starting up procedure could produce permanent damage UPS**

PARALLEL UPS CONNECTION

- **Make sure the UPS is Off before starting the installation**
- **Remember to check all wires to be connected (including external batteries) are not powered before manipulating them.**

UPS TERMINAL BLOCK PREPARATION

Remove cover of terminal block at the UPS rear panel, identified as 11 in rear panel section of this manual
DO NOT use a wall power outlet to plug UPS to AC Line as usually ratings of this kind of outlets are not enough to power 6KVA UPS. UPS Input wire must be connected directly to electric panel board.

UPS INPUT AND OUTPUT CONNECTIONS

Connect input and output ground wires to proper place on the UPS chassis on both sides of terminal blocks. Ground wires must be FIRST to be connected and LAST to be disconnected. Refer to Figures 3A and 3B.

a) Grounding Wires: Connect AC Input and Output ground of both UPS according to figures.

b) AC Input Wires: AC Input wires must come from individual electrical circuit breakers on electrical panel board before being connected to UPS terminal block.

c) AC Output Wires: AC output wires must be connected directly to external circuit breakers of bigger capacity.

d) If UPS is EX model, external battery banks must be connected to dedicated connector located in rear panel of UPS.

e) Control Cables for Parallel Connection: Connect Parallel Cable and shared current according to figures.

WARNING – EXTERNAL BATTERIES:
If UPS to be connected in parallel have external batteries it is mandatory each UPS counts with its own battery pack. Parallel connection cannot be performed if only one of two (or two or three) UPS have external batteries. Permanent damages will be produced in UPS if this warning is not followed.

PARALLEL CONFIGURATION 1: 1 INPUT - 1 OUTPUT

- **1 INPUT 120Vac**
- **1 OUTPUT 120Vac: 100% CAPACITY****

**** Under this configuration output can supply 100% of total UPS capacity.**

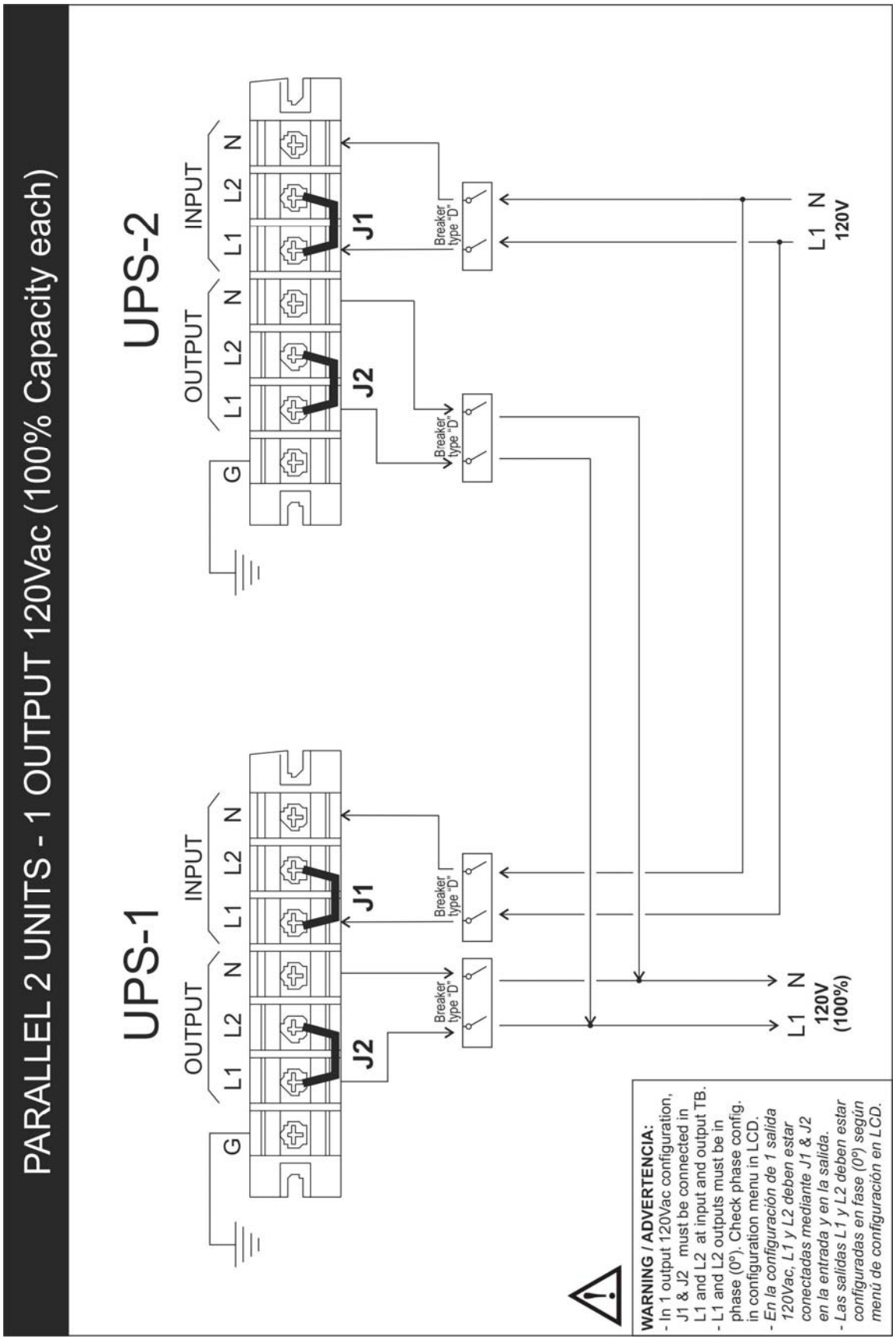
WARNING:
***** To connect 2 outputs in one phase output we must be sure phase angle between outputs is 0º and only 1 phase line must be connected at UPS input. Please follow below procedure:***

MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE IN YOUR UPS AND SYSTEM

1.- Make sure L1 and L2 terminals at input terminal block are connected with a jumper.
2.- UPS must be connected to one phase input line only.
3.- Check to confirm function 03 in LCD panel is configured as "ATO" (automatic mode). In this mode, inverter output will follow input phase. Phase angle read by UPS must be 000 in function 03 screen. "ATO" is factory preconfigured value.
4.- Check to confirm function 04 in LCD panel is configured as "ENA" (Enabled). If not, error alarms 1A and 1B will be generated by the UPS. Note: "ENA" is the factory preconfigured value.

***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

Only after configuring all UPS to be connected in parallel, terminal block connections can be done according to following figure:


PARALLEL 2 UNITS - 1 OUTPUT 120Vac (100% Capacity each)
UPS-1
UPS-2
OUTPUT
INPUT
G
L1
L2
N
J1
J2
Breaker type "D"
L1 N
120V
(100%)
WARNING / ADVERTENCIA:
- In 1 output 120Vac configuration, J1 & J2 must be connected in L1 and L2 at input and output TB.
- L1 and L2 outputs must be in phase (0º). Check phase config. in configuration menu in LCD.
- En la configuración de 1 salida 120Vac, L1 y L2 deben estar conectadas mediante J1 & J2 en la entrada y en la salida.
- Las salidas L1 y L2 deben estar configuradas en fase (0º) según menú de configuración en LCD.

PARALLEL CONFIGURATION 2: 2 INPUT - 2 OUTPUTS

- 2 INPUTS 120Vac
- 2 OUTPUTS 120Vac

**** Each output can supply only 50% of total UPS capacity.**

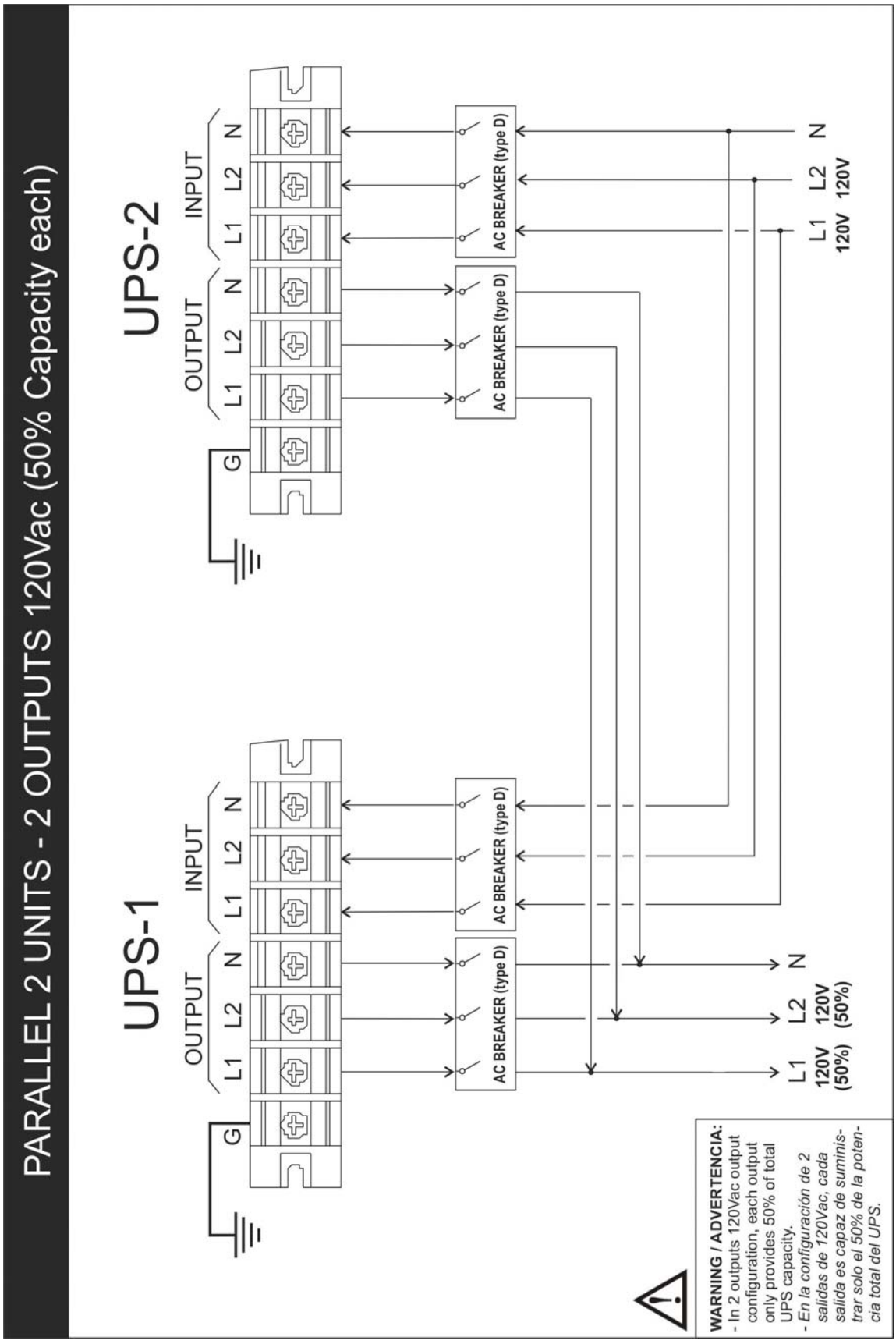
WARNING:
To use this UPS as 2 phases UPS is MANDATORY to check there is NO jumpers connected between L1 and L2 at Input and output terminal block. You must follow below instructions:

MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE IN YOUR UPS AND SYSTEM

1.- Remove all jumpers between L1 and L2 at input and output terminal block.
2.- You MUST confirm Configuration MENU 03 and 04 in LCD panel are configured as follows:
2.1- Configuration MENU 03 must be set as "ATO" (automatic mode): Output phase angle is same than input phase angle. In normal conditions angle phase between separate phases is 120º.
2.2- Configuration MENU 04 is not available under this mode. It is indicated as RESERVED. Since UPS detects input has been wired as 2 separate phases, output cannot be configured as 1 phase output.

***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

Only after configuring all UPS to be connected in parallel, terminal block connections can be done according to following figure:


PARALLEL 2 UNITS - 2 OUTPUTS 120Vac (50% Capacity each)
UPS-2
UPS-1
OUTPUT
INPUT
G
L1
L2
N
AC BREAKER (type D)
L1 120V
L2 120V
N
L1 120V (50%)
L2 120V (50%)
N
WARNING / ADVERTENCIA:
- In 2 outputs 120Vac output configuration, each output only provides 50% of total UPS capacity.
- En la configuración de 2 salidas de 120Vac, cada salida es capaz de suministrar solo el 50% de la potencia total del UPS.

PARALLEL CONFIGURATION 3: 2 INPUT - 1 OUTPUT 208V

- 2 INPUTS 120Vac
- 1 OUTPUT1 208Vac

**** Under this configuration output can supply 100% of total UPS capacity.**

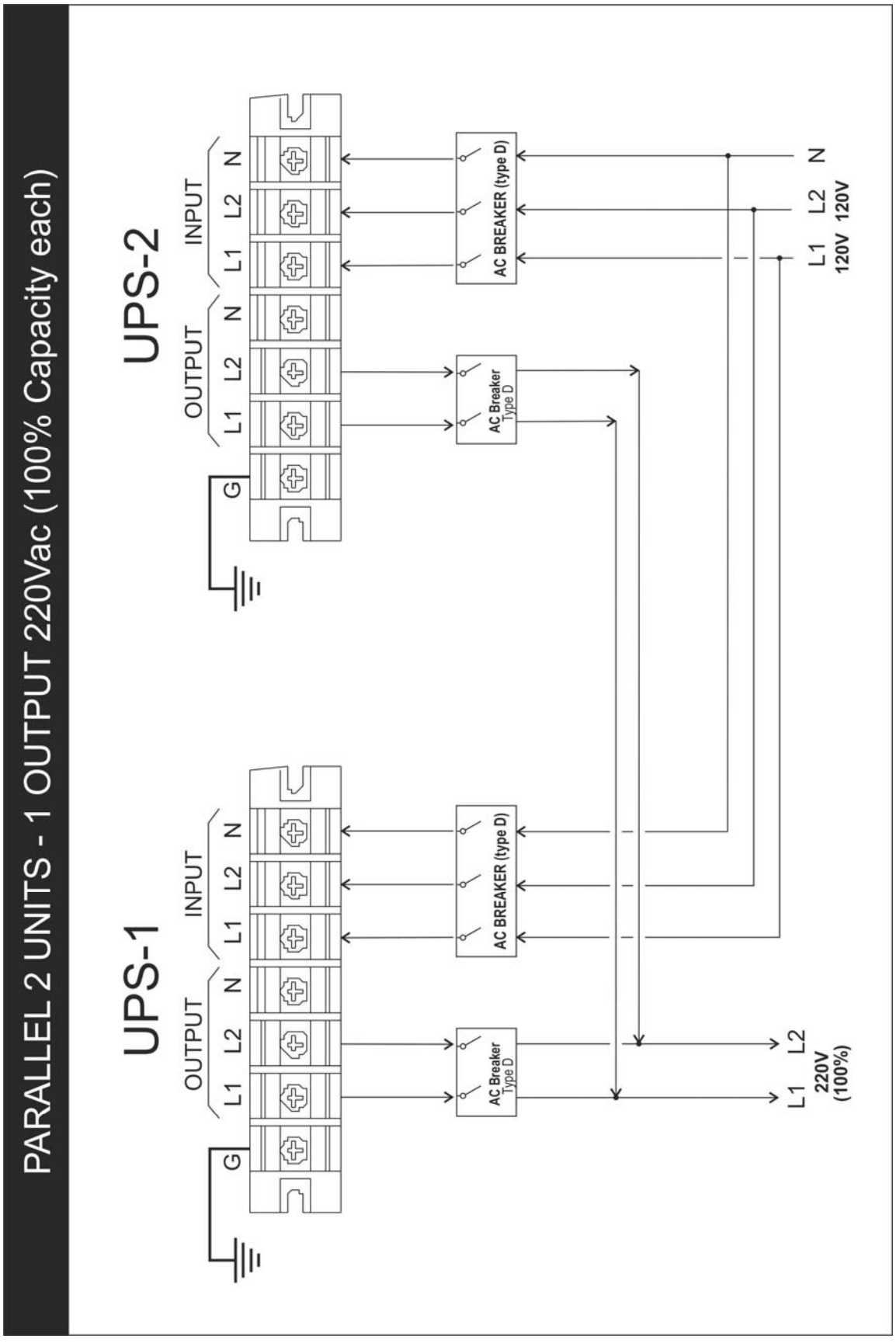
WARNING:
To use this UPS as 2 phases UPS is MANDATORY to check there is NO jumpers connected between L1 and L2 at Input and output terminal block. You must follow below instructions:

MANDATORY INSTRUCTIONS TO AVOID PERMANENT DAMAGE IN YOUR UPS AND SYSTEM

1.- Remove all jumpers between L1 and L2 at input and output terminal block.
2.- You MUST confirm Configuration MENU 03 and 04 in LCD panel are configured as follows:
2.1- Configuration MENU 03 must be set as "ATO" (automatic mode): Output phase angle is same than input phase angle. In normal conditions angle phase between separate phases is 120º.
2.2- Configuration MENU 04 is not available under this mode. It is indicated as RESERVED. Since UPS detects input has been wired as 2 separate phases, output cannot be configured as 1 phase output.

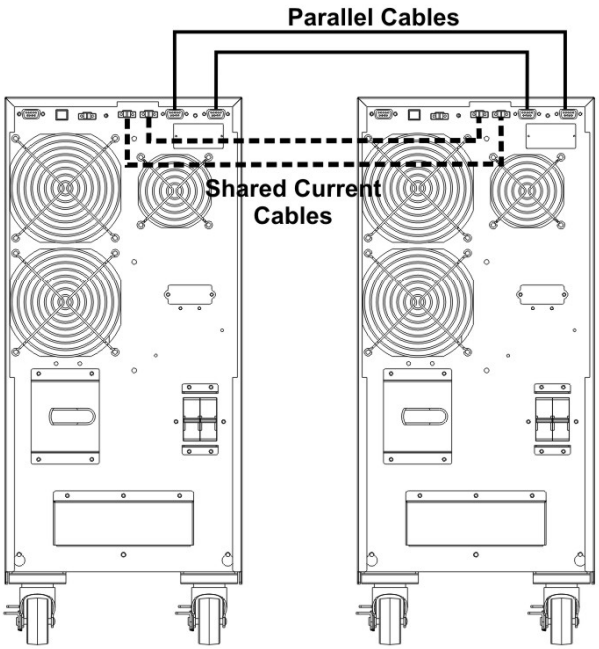
***** Detailed instructions to check and configure function 03 & 04 available in Configuration section***

Only after configuring all UPS to be connected in parallel, terminal block connections can be done according to following figure:

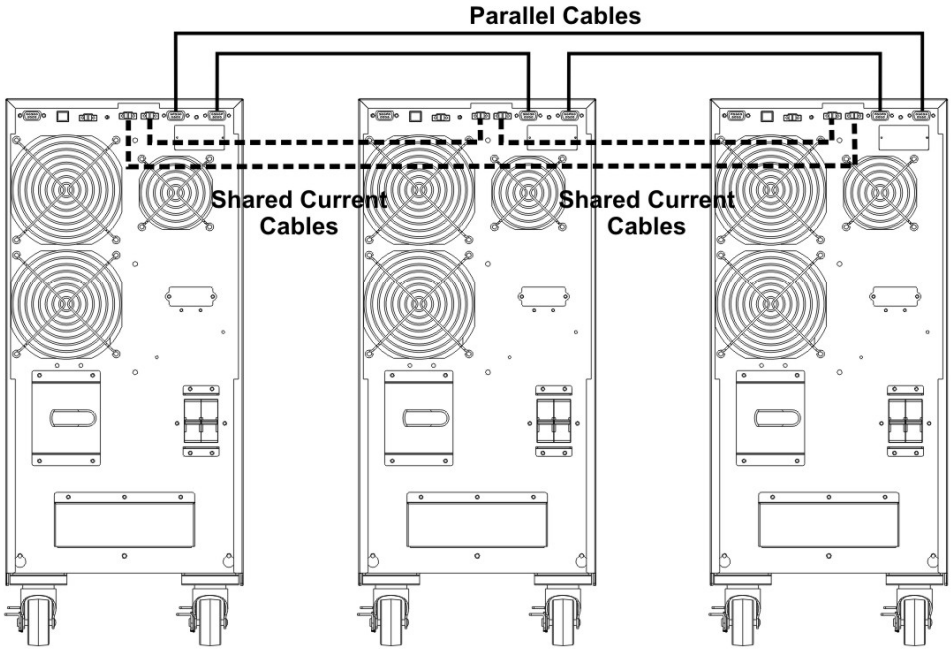

PARALLEL 2 UNITS - 1 OUTPUT 220Vac (100% Capacity each)
UPS-2
INPUT
L1 L2 N
OUTPUT
L1 L2 N
G
AC BREAKER (type D)
AC Breaker Type D
L1 L2 N
120V 120V
UPS-1
INPUT
L1 L2 N
OUTPUT
L1 L2 N
G
AC BREAKER (type D)
AC Breaker Type D
L1 L2
220V
(100%)

PARALLEL - CONTROL CABLES

2 UPS Parallel System - Control Wiring



3 UPS Parallel System - Control Wiring



6.- START-UP: SINGLE UPS

INSPECTION BEFORE START UP

1. Make sure all wires are tightly connected to terminal block. Any loose connection will produce overheating, failures and damage to UPS.
2. Make sure all instructions of sections 3 and 4 have been performed correctly.
3. Put the terminal block cover back in its position to avoid access to wiring
4. Check EPO connections.
   - EPO Port closed (Wired): EPO function disabled
   - EPO port connected to an emergency switch: EPO function available by activation of Emergency Switch; which must be "Normally Closed" type in order to guarantee that UPS will shut down when circuit opens.
5. Check Maintenance Bypass Switch (MBS) located in UPS rear panel is in UPS position and its cover is duly installed.
6. Make sure all external protection devices in input and output lines are in open (OFF) position.

SINGLE UPS - START UP PROCEDURE

1. Make sure all equipments connected to UPS are off
2. Power AC input at electrical panel board by setting input AC Lines Circuit Breaker to ON
3. Put Battery Bank breaker to ON (Only for Ex Models, If using external battery pack)
4. Put AC INPUT Breaker to ON in UPS rear panel.
5. LCD in front panel starts to show bypass mode. UPS Outputs are powered although UPS is off because it is on By-Pass mode. At this moment output power is being supplied by AC Input Power Line.
6. Start up the UPS by pressing On push button in front panel until beep is heard and ON message displayed on top of the LCD.
7. Few seconds after, the UPS leaves By-Pass mode to enter in Normal Online Mode, also known as "AC Mode"
8. Power on sequentially each equipment connected to UPS output. The front panel LCD should show the load increase as equipments start.
9. Once all equipments are on, the total power consumption (load) should not exceed UPS capacity.
10. At this moment UPS working under NORMAL AC-MODE and the system is supplied by UPS.

NOTE 1: If any error or warning message in indicated in LCD please revise Troubleshooting section of this manual.

NOTE 2: UPS batteries maybe are not fully charged. UPS could require about 4 to 6 hours to recharge batteries up to 100% of their capacity.

7.- START-UP: PARALLEL UPS

REQUIREMENTS FOR PARALLEL SYSTEM

WARNING: Before starting up this parallel UPS system is mandatory to comply with all below requirements.

1.- Maximum quantity of UPS to be connected in parallel is 3. Do not try to connect more than 3 units in parallel.
2.- All UPS to be connected in parallel system must be same model (all 6K or all 10K) with same firmware version. Please ask your distributor to confirm firmware is the same in case of doubts. UPS belonging to same manufacturing batch have same firmware version.
3.- UPS configuration (configuration parameters of LCD menu) must be the same for all UPS.
4.- All MBS (Maintenance Bypass Switch) located in rear panels must be in "UPS" position and switch covers must be properly installed.
5.- In case of using external battery packs, each UPS must has same external battery packs quantity and type.
6.- All control parallel cables (parallel cables and current share cables) must be properly connected in UPS rear panels as indicated in section 5 of this manual.
7.- Make sure total available capacity (in Watts) of all UPS to be connected in parallel is higher than load to be connected to UPS system. It is recommendable total UPS power is at least 25% higher to total load. If UPS system will work as n+1 redundant system, make sure total UPS capacity after removing one UPS is higher than maximum load to be connected. If not remaining UPS will not be able to support connected load when one of the units was removed.

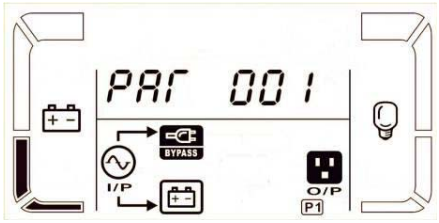
INSPECTION BEFORE START UP

1. Make sure all wires are tightly connected to terminal block. Any loose connection will produce overheating, failures and damage to UPS.
2. Make sure all instructions of sections 3 and 5 have been performed correctly.
3. Put the terminal block cover back in its position to avoid access to wiring
4. Check EPO connections.
   - EPO Port closed (Wired): EPO function disabled
   - EPO port connected to an emergency switch: EPO function available by activation of Emergency Switch; which must be “Normally Closed” type in order to guarantee that UPS will shut down when circuit opens.
5. Check Maintenance Bypass Switch (MBS) located in UPS rear panel is in UPS position and its cover is duly installed.
6. Make sure all external protection devices in input and output lines are in open (OFF) position.
7. Check control parallel cables are connected according to section 5 of this manual.

START UP FOR PARALLEL UPS SYSTEM

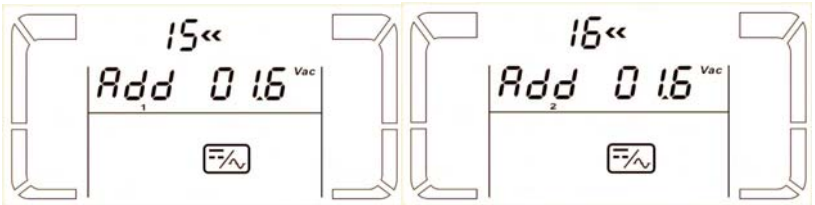
WARNING: Make sure all requirements and previous inspection have been revised and complied.

1.- Make sure all equipments to be protected and connected to UPS output are in OFF condition.
2.- Check AC input breaker located in UPS rear panels is in OFF position in all UPS of the system.
3.- Power on external main AC input in electrical panel. Set to ON position all external AC input breakers.
4.- If UPS are using external battery packs, set to ON all DC breakers to connect external DC packs to UPS.
5.- For UPS No. 1: Set to "ON" AC input breaker located in rear panel of UPS No. 1. Wait until UPS No.1 completes auto-checking and Bypass LED lights continuously.
6.- For UPS No. 2: Set to "ON" AC input breaker located in rear panel of UPS No. 2. Wait until UPS No.2 completes auto-checking and Bypass LED lights continuously.
7.-In case of having 3 UPS in the system, proceed in similar manner with UPS No. 3.
IMPORTANT: AC input breakers activation must be done in one by one and not at same time. First for UPS No. 1, then for UPS No. 2 and finally for UPS No. 3 (if you have a parallel system with 3 UPS). If AC input breakers are activated all at same time, warning message "3F" could be activated. If it occurs, reinitiate procedure sequentially. Warning 3F message must be previously reset according to warning and error section in this manual
8.- When rear panel AC breaker is set to "ON", This UPS recognizes all other UPS previously powered ON in the parallel system and will get its own parallel identification as PAR 00X, where X is the position according to power on sequence. PAR 001 for 1st UPS powered on, PAR 002 for 2nd and PAR 003 for 3rd UPS.
This message is only indicated in UPS manufactured after Dec-2011. If UPs is before Dec-2011 continue without waiting for PAR 00X message.



9.- At this moment all UPS LCDs must turn on to indicate internal circuitry in UPS is been powered.
** If bypass mode is allowed, all UPS will go to bypass mode.
** If bypass mode is not allowed by configuration, all UPS will go to a kind of stand-by mode with outputs open and powered off waiting until ON command is selected in UPS front panel.

10.- At this moment configuration menu in each UPS LCD must be revised to select desired configuration. It is mandatory to use same configuration in all configuration parameters for all UPS of the system.
11.- Once configuration has been selected and verified, all UPS can be started up by selecting "ON" push button in front panel. Please press "ON" push button for each UPS. One long "beep" will be generated. "ON" message will be displayed on top side of LCD.
12.- All UPS will go to NORMAL Online mode at same time.
13.- Before setting to "ON" all external output breakers please revise AC voltage output on each UPS.
** Please measure AC output voltage using a digital multi-meter and confirm all output voltages are similar. Maximum acceptable deviation should be 3Vac or lower. Typically 1Vac.
** If difference between output voltage values is higher than 3Vac, we suggest to adjust them by function 15 (for inverter output L1) and function 16 (for inverter output L2). You can reduce (Sub) or increase (Add) voltage output voltage for each of 2 inverters in each UPS as required.



14.- If AC output voltages are as expected, please set to "ON" external output breakers for all UPS progressively. Start with UPS Nº 1, then UPS Nº2, etc. After that, all UPS outputs are connected in parallel.
15. Check to confirm there are no error or alarm messages on LCDs. At this moment all UPS are working in NORMAL Online mode and connected in parallel.
16.- It is time to power on equipments connected to UPS output. Power on progressively one by one. Check on UPS LCDs how power output rises meanwhile equipments are powered on.
** Once all output load is connected check power output is below 100%.
** At this moment, UPS parallel system is powering your system in NORMAL Online mode.

8.- OPERATION INTERFACE

UPS FRONT PANEL: PUSH BUTTON

RACK FRONT PANEL **TOWER FRONT PANEL**

Both Rack and Tower type UPS offer same 4 function buttons as described below:

ON / ENTER

POWER ON : Keep selected during 1 second to power UPS ON.
ENTER : It Works as "ENTER" or confirmation function when LCD is in configuration menu mode.

OFF / ESCAPE

POWER OFF : Keep selected to turn UPS OFF.
ESCAPE : It Works as ESCAPE key when LCD is in configuration menu mode.

TEST / UP

BATTERY TEST : When UPS is in normal mode by selecting TEST key UPS enters into battery test mode during 10 seconds.
UP : It Works as UP key when LCD is in configuration menu mode.

MUTE / DOWN

ALARM MUTE : It mutes alarm beep in progress.
DOWN : It Works as DOWN key when LCD is in configuration menu mode,

TEST / UP + MUTE / DOWN - Simultaneous Activation

CONFIGURATION MODE : UPS enters into configuration menu when these 2 keys are activated at same time during 1 second.

UPS FRONT PANEL: LED INDICATOR LIGHTS

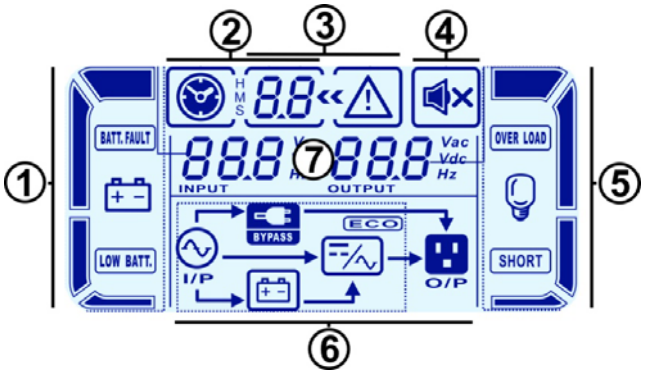
There are 4 LED indication lights in front panel, located below LCD. These 4 LEDs describe UPS condition as follow:

MODE	Bypass	Line	Battery	Fault
UPS is in Auto-check mode	●	●	●	●
BYPASS Mode	●	○	○	○
NORMAL Mode	○	●	○	○
BATTERY Mode	○	○	●	○
BATTERY TEST in progress	●	●	●	○
ECO Mode Activated	●	●	○	○
UPS in Failure	○	○	○	●

● LED = ON / ○ LED = OFF

UPS FRONT PANEL: LCD

This UPS has a sophisticated LCD able to display all important information related to input line, UPS status and values, operation mode and error and alarm messages. It is a powerful information tool to know what is happening at any moment. LCD is also the configuration interface for all configurable parameters.



1.- BATTERY INFORMATION: In this section is displayed battery charging level and battery alarms/error icons.

2.- ELAPSED TIMER: When UPS switches to battery mode, elapsed time during battery mode is displayed in Hours/Minutes/Seconds.

3.- ERROR / ALARM CODE: In case of alarm or error, 2 digits code is displayed in this section to describe the kind of error or alarm. Revise error and alarm codes tables in this manual.

4.- BEEP STATUS: It shows if audible alarm buzzer is active or muted.

5.- LOAD INFORMATION: In this section is displayed load value connected to UPS by 4 segments displays: (0-25%), (25%-50%), (50%-75%) and (75%-100%). It also shows error and alarm icons related to UPS output.

6.- UPS MODE: All possible UPS modes are indicated by this section in graphic way.

7.- INPUT / OUTPUT VALUES: Input and output voltage and frequency values can be monitored in this LCD section. In battery mode this section shows battery DC voltage.

9.- OPERATION: SINGLE UPS

This is a True On Line Double Conversion UPS and it is designed to offer clean, bump-less and highest quality power to your computer related equipments protecting also your valuable data. Power delivered by UPS is 100% sine wave as main line.
According to AC Line status the UPS may operate in following modes:

ONLINE NORMAL Mode

When UPS is turned off by selecting ON push button in front panel and AC Line is normal it enters into ONLINE NORMAL mode. Under this mode UPS Inverter powers outputs and the energy is taken from DC voltage coming from AC/DC converter. Batteries are charged by AC Line if required.

BATTERY Mode (Also known Inverter Mode)

Under ONLINE NORMAL mode when UPS detects a problem in AC input Line or black out it enters in battery mode. Under this mode UPS takes energy from its batteries to power outputs. There are no transfers neither micro-cuts on UPS outputs as inverter was already working, the only difference is that energy for outputs is now coming from batteries. Transfer time is actually Zero (0 ms).
UPS also can enter in battery mode when it is turned on without an acceptable AC input.

ECO Mode

There is an energy saving function that makes UPS to power its outputs with AC Line directly. If under this mode, UPS detects AC input is out of acceptable range it enters into Normal Online mode.
If an AC failure occurs under ECO mode the UPS's inverter starts working draining energy from batteries. There is a transfer time of 4 ms typical. This mode is configured and activated from LCD panel. There is specific input voltage range and input frequency range to configure for ECO mode.

BY PASS Mode

Under BYPASS mode, UPS outputs are powered by AC Line. UPS is out of the circuit. This mode can be caused by operator by means of the maintenance switch (on the rear panel) or from LCD panel when OFF button is activated, but it may also happen automatically by UPS malfunction or overload detected at UPS outputs.

FREQUENCY CONVERSION Function

This UPS offers a very sophisticated function named frequency conversion (CF) that allows UPS to generate power output at determined frequency value (50Hz or 60Hz) no matter input frequency value. UPs will be able to generate output at 50Hz even input source is at 60Hz or generate 60Hz even if connected to 50Hz source.
This function can be configured and activated by LCD. Revise configuration section of this manual.

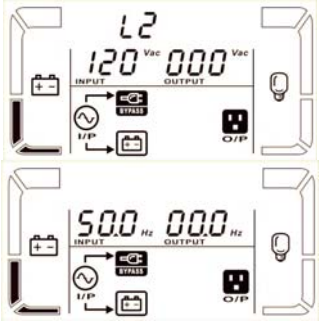
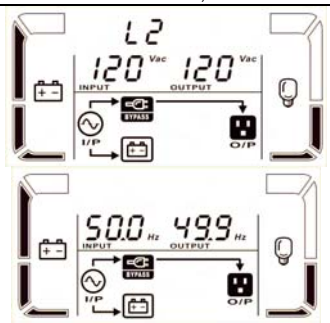
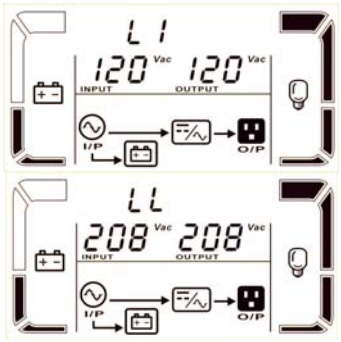
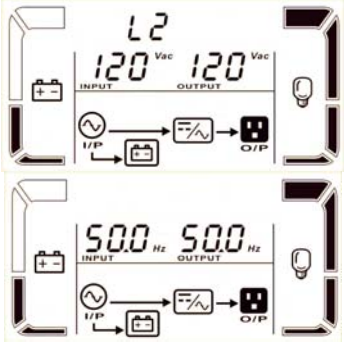
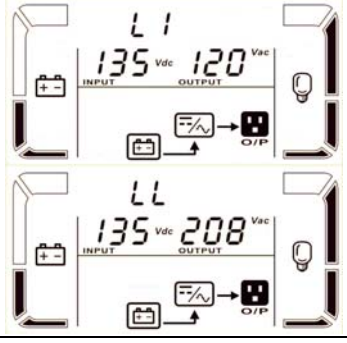
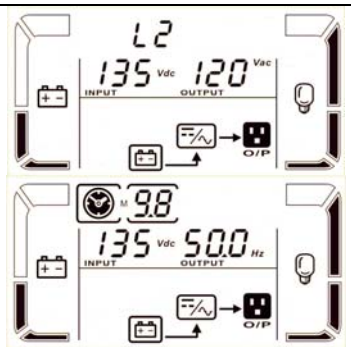
IMPORTANT NOTES:

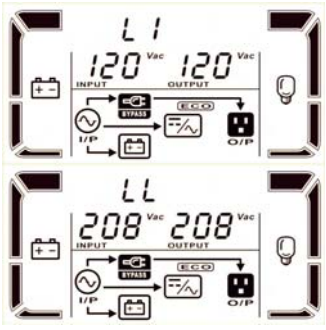
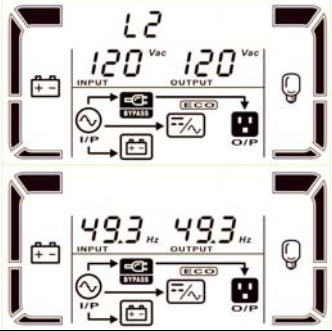
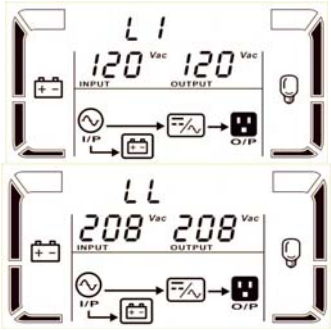
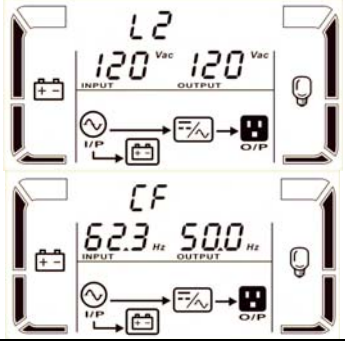
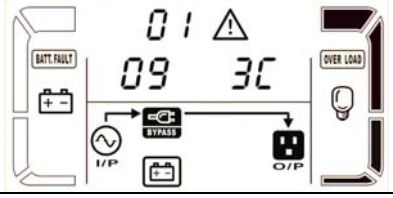
1.- Under CF mode, UPS will disable BYPASS mode. Since UPS has been configured to generate output with frequency value different to input frequency, BYPASS mode is disable to avoid a not acceptable frequency value at output.

2.- When CF function is activated, maximum power output is de-rated to 60% of maximum nominal capacity. For example, for a 10KVA (8KW) model, when CF is activated maximum output is decreased to 6KVA (4.8KW).

FUNCTION DISPLAY ACCORDING TO OPERATION MODE

In each mode UPS will show 4 different alternating screens as described below:

<table>
<tr><td rowspan="2">NO-OUTPUT MODE</td><td colspan="2">UPS is connected to main input but UPS output is not powered on because one of the following reasons:
1.- BYPASS mode is not activated (DIS) or forbidden (FBD) and ON button in front panel has not been activated.
2.- UPS has been connected by first time to main but input is out of operative range (by voltaje or by frequency).
LCD shows there is no output (3 digits value is 000 at right side of the LCD)
UPS displays these 4 screens in alternative manner to show L1, L2, L to L and frequency values).</td></tr>
<tr><td> </td><td>  </td></tr>
<tr><td rowspan="2">BYPASS MODE</td><td colspan="2">UPS is in bypass mode. UPS outputs are supplied directly from the input Main. LCD shows input main is conducted directly through bypass line with any intervention of the inverter. This mode is typical when UPS is connected to the main but ON button is not activated. The UPS is like OFF but providing output from the input main or because UPS has detected either an overload or an internal error. BYPASS mode must be allowed in function 10,</td></tr>
<tr><td> </td><td>  </td></tr>
<tr><td rowspan="2">NORMAL AC MODE</td><td colspan="2">UPS is connected to main source. Main source is OK.. UPS is generating output by inverter.
LCD figures show output comes from inverter. Input is used for supplying rectifier and charging batteries.</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td rowspan="2">BATTERY MODE</td><td colspan="2">UPS goes to battery mode when input failure is detected. In battery mode LCD shows battery voltage in Vdc (135Vdc in below figures) instead of AC input voltage. Additionally output voltage is indicated in right side of the LCD.
Fourth screen shows time in battery mode.</td></tr>
<tr><td>  </td><td>  </td></tr>
</table>

<table>
<tr><td rowspan="3">ECO MODE</td><td colspan="2">In ECO mode UPS output is not generated by the inverter. Main input is used to supply UPS output. In that way UPS inverter does not need to work and UPS energy performance is improved.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">CVCF MODE</td><td colspan="2">This UPS can be configured through CVCF mode to supply a fixed frequency output (50Hz or 60Hz) no matter input frequency matches with the output frequency. For example: input frequency can be 60Hz but UOS can generate output at 50Hz.
In 4th screen we can see input frequency in 62,3Hz but output at 50.0Hz.
NOTE: Under this mode bypass function is not allowed.</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">WARNING (ALARM)</td><td colspan="2">Under this mode alert triangle icon is flashing on LCD.
Red LED is blinking on front panel and warning message is displayed in LCD.
UPS works in normal mode generating output by inverter.
For this example warning codes 01, 09 and 3C are indicated on LCD.</td></tr>
<tr><td colspan="2"> 
</td></tr>
<tr><td colspan="2"></td></tr>
<tr><td rowspan="3">ERROR MODE</td><td colspan="2">Under ERROR or FAULT mode alert triangle is indicated fixed in LCD
Red LED lights ON.
UPS inverter is stopped.
In this example 43 error code is indicated on LCD.</td></tr>
<tr><td colspan="2">
</td></tr>
<tr><td colspan="2"></td></tr>
</table>

10.- OPERATION: PARALLEL UPS

UPS operation modes for UPS in parallel are basically same than described for single UPS.
However it is important to remark all UPS in parallel system must work under same mode at same time. Parallel function does not allow different operation modes between UPS of the system.

Removing an UPS from a Parallel System

There are 2 procedures to isolate and remove one UPs from operative parallel system:

A) Total Power-Off:

Powering off all UPS of the system. This is the less risky procedure.

B) Keeping Parallel system in ONLINE mode:

First check all below requirements are complied before trying to follow this procedure.

Requirements for removing one UPS in operative UPS:

1.- This operation must be performed only by qualified and trained personnel.
2.- This operation must be coordinated with the system administrator. System administrator must know about the related risks of this procedure since the system could be shut down during operation because external reasons like:
- If during this operation occurs a failure in main AC line, battery backup of remaining UPS could not be enough to keep system running before reconnecting removed unit.
- External breakers could be activated randomly during operation so system could be tripped.

3.- There must be a detailed plan to perform this procedure identifying all maintenance activities to be performed on removed unit before reconnecting it.
4.- Remaining UPS must be able to support the power system after selected unit is removed.
5.- Each UPS must have their own external protections to allow total electrical isolation
6.- There must be enough physical room to allow comfortable access to all UPS of the system.

Note: if any of the above requirements cannot be complied, below procedure must not be performed.

In case all requirements can be complied proceed as follow:
1.- Power off selected UPS by OFF button in front panel.
Note: OFF button must be selected twice. If OFF is selected only one time, UPS will not respond. Once UPS is turned off it will shut down its outputs but remaining LCD on. This UPS will not go to bypass mode since it is working in UPS system with other UPS generating their output from their inverters. At this moment any failure in AC main line must be supported by operative UPS.
2.- Set AC input breaker located in rear panel of the selected UPS to OFF position.
3.- Set external output breakers of selected UPS to OFF position.
4.- Set external input breakers of selected UPS to OFF position.
5.- Once LCD is turned Off, in selected UPS to be isolated, disconnect control parallel cables (parallel cables and current share cables) from its rear panel. Other operative UPS must keep their control parallel cables connected.
NOTE: If you disconnect parallel control cables in any of the operative UPS of the system, a communication problem will occur and the parallel system will be shut down.

At this moment selected UPS is currently powered off and isolated so that it can be serviced or simply removed.

Adding an UPS to a Parallel System

- For adding a new UPS to an operating system, all UPS must be turned off and all equipments must be disconnected from UPS outputs.
- Total UPS quantity must be 3 or lower.
- Firmware of all UPS must be compatible for allowing parallel functionality.
- New UPs must be configured with similar LCD configuration menu than current UPS of the system.
- Follow the procedure explained in Installation Section of this manual.

11.- UPS CONFIGUIRATION

* This menu is activated by simultaneous selection of “Test/Up” + “Mute/Down” keys during 1 second or longer when UPS is in OFF or BYPASS mode.

Configurable functions according to UPS mode

Code	Description	Bypass mode	AC mode	ECO mode	CVCF mode	Battery mode	Battery Test
1	Output voltage	●					
2	Output frequency	●					
3	Output Phase	●					
4	Output parallel function setting	●					
5	Voltage range for bypass	●					
6	Frequency range for bypass	●					
7	ECO mode enable/disable	●					
8	Voltage range for ECO mode	●					
9	ECO mode frequency range setting	●					
10	Bypass mode setting	●	●				
11	Battery backup time setting	●	●	●	●	●	●
12	Reserved /Neutral Loss**	●					
13	Battery voltage adjustment	●	●	●	●	●	●
14	Charger voltage adjustment	●	●	●	●	●	●
15	Inverter1 voltage adjustment		●		●	●	
16	Inverter2 voltage adjustment		●		●	●	

”●” configurable parameter according to each UPS working mode.

Configuration menu texts

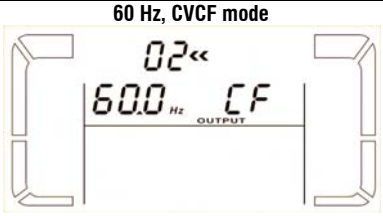
TEXT	DESCRIPTION
ENA	Enable
DIS	Disable
ATO	Auto
BAT	Battery
NCF	Normal mode (not CVCF mode)
CF	CVCF mode
SUB	Subtract
ADD	Add
ON	On
OFF	Off
FBD	Not allowed
OPN	Allow
RES	Reserved
N.L	Neutral line loss
CHE	Check
OP.V	Output voltage
CP	Constant phase angle
OP.P	Two phase output parallel function
L1	Phase L1
L2	Phase L2
LL	Line to line voltage

Configuration menu functions and screens

- **01: Output Voltage Configuration**

LCD	
	Parameter 3: Output Voltage Value Output can be selected from following options: **100:** 100Vac **110:** 110Vac **115:** 115Vac **120:** 120Vac **127:** 127Vac Default is 120Vav

- **02: Output Frequency**

LCD	
60 Hz, CVCF mode  **50 Hz, Normal mode** **ATO** 	**Parameter 2: Output Frequency** Output can be selected from following choices: **50.0Hz:** 50.0Hz. **60.0Hz:** 60.0Hz. **ATO:** Automatic: Under this mode output frequency is selected according to input frequency: 50Hz if input is (46Hz y 54Hz) and 60Hz if input is (56Hz y 64Hz). ATO mode is factory default value. **Parameter 3: Frequency Mode** Adjusting parameter 3, can be selected CF Mode which is frequency converter mode or NCF in NON converter mode. **CF:** This mode allows fixing a fixed output frequency in parameter 2. **NCF:** This mode allows output frequency was selected according to the input meanwhile input frequency is inside allowed range. If input frequency is out of range UPS will go to battery mode.

IMPORTANT NOTE ABOUT FREQUENCY CONVERSION FUNCTION "CF":

*** When CF function is enable to generate an output with a different frequency value than input, bypass mode will be automatically disable.**

*** When CF function is activated, maximum power output is de-rated to 60% of standard power output. For example: for 10KVA UPS when CF is activated max. output power is 6KVA.**

- **03: Output Phase**

LCD	
 	Parameter 2: Constant Output Phase **CP:** Sets UPS to CP mode. If selected, the output phase will be fixed at 0, 120, 180 or 240 according to setting in parameter 3. No matter input phase. ***SPECIAL NOTE***: if CP is activated all BYPASS modes are disabled. We suggest to keep this function configured as ATO. **CP mode is used when 2 alternative input sources operates with different phase angle as explained in section 04 (special mode for motor-generators)** **ATO:** In this mode output phase angle will be fixed according to the input phase angle detected when UPS starts up. **Parameter 3: Phase setting** **In CP mode:** You may select the phase angle between output lines. **In ATO mode:** parameter 3 shows phase angle saved as read in the input when UPS was powered up.

- **04: Output parallel function setting**

Interface	Setting
	When UPS input lines are not in parallel (Jumper between input L1 and input L2 is removed), MENU 04 will be not available since outputs cannot be connected in parallel. **Under this situation MENU 04 will show as reserved (not available) = RES RES.**
 	When UPS inputs are connected in parallel (jumper connected between input L1 & input L2), UPS outputs can be configured as 1 output line (output L1 & output L2 in parallel) or 2 separate output lines. This configuration requires to set parameter 03 and 04 of MENU 04. **Parameter 2:** **OP.P** means output 1 and output 2 parallel function. **Parameter 3:** **DIS:** disable output parallel function. Under this configuration output 1 and 2 must NOT be connected in parallel. **ENA:** enable output parallel function to allow connecting 2 outputs in parallel to get only one phase output with 100% of total UPS capacity. It is MANDATORY to use one phase input connection when one phase output is required. NOTE: If ENA is configured and 2 different outputs configuration is used this setting will be ignored.

- **05: Voltage range for bypass**

Interface	Setting
	Parameter 2: Set the acceptable low voltage for bypass. Setting range is from 60V to 99V and the default value is 60V. **Parameter 3:** Set the acceptable high voltage for bypass. Setting range is from 131V to 140V and the default value is 140V.

- **06: Frequency range for bypass**

Interface	Setting
	Parameter 2: Set the acceptable low frequency for bypass. 50 Hz system: Setting range is from 46.0Hz to 49.0Hz. 60 Hz system: Setting range is from 56.0Hz to 59.0Hz. The default value is 46.0Hz/56.0Hz. **Parameter 3:** Set the acceptable high frequency for bypass. 50 Hz: Setting range is from 51.0Hz to 54.0 Hz. 60 Hz: Setting range is from 61.0Hz to 64.0Hz. The default value is 54.0Hz/64.0Hz.

- **07: ECO mode enable/disable**

Interface	Setting
	Parameter 3: Enable or disable ECO function. You may choose following two options: **DIS:** disable ECO function **ENA:** enable ECO function If ECO function is disabled, voltage range and frequency range for ECO mode still can be set, but it is meaningless unless the ECO function is enabled.

- **08: Voltage range for ECO mode**

Interface	Setting
	Parameter 2: Low voltage point in ECO mode. The setting range is from 5% to 10% of the nominal voltage. **Parameter 3:** High voltage point in ECO mode. The setting range is from 5% to 10% of the nominal voltage.

09: Frequency range for ECO mode

Interface	Setting
	Parameter 2: Set low frequency point for ECO mode. 50 Hz system: Setting range is from 46.0Hz to 48.0Hz. 60 Hz system: Setting range is from 56.0Hz to 58.0Hz. The default value is 48.0Hz/58.0Hz. **Parameter 3:** Set high frequency point for ECO mode. 50 Hz: Setting range is from 52.0Hz to 54.0 Hz. 60 Hz: Setting range is from 62.0Hz to 64.0Hz. The default value is 52.0Hz/62.0Hz.

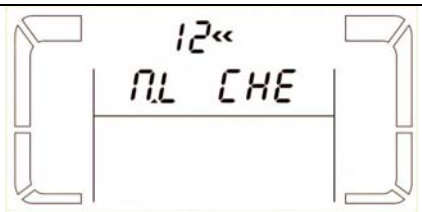
- **10: Bypass mode setting**

Interface	Setting
	Parameter 2: **OPN**: Bypass allowed. When selected, UPS will run at Bypass mode depending on bypass enabled/disabled setting. **FBD**: Bypass not allowed. When selected neither manual nor automatic Bypass mode will not be available under any situations. **Parameter 3:** **ENA**: Bypass enabled. When selected, Bypass mode is available when required. **DIS**: Bypass disabled to work in following manner: * Automatic bypass is available for overload or error causes * Manual bypass is NOT allowed. Manual bypass means users can force to Bypass mode when pressing OFF button in front panel. If **ENA** is set UPS will go to bypass mode when OFF button is selected by user. If **DIS** was set UPS will Turn OFF when OFF button is selected.

- **11: Battery backup time setting**

Interface	Setting
	Parameter 3: **000～999:** Set the maximum backup time from 0min to 999min. UPS will shut down to protect battery after backup time arrives. The default value is 990min. **DIS:** Disable battery discharge protection and backup time will depend on battery capacity. UPS will be working in battery mode until low battery level is detected.

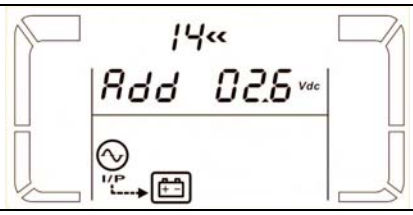
- **12: Neutral Line Loss**

Interface	Setting
	**Parameter 2:** N.L: Indicates Neutral Loss Detection Function **Parameter 03:** Can be configured as: DIS, ATO or CHE **DIS**: Disable: UPS will not check for input neutral connection **ATO:** Automatic: UPS will detect input neutral connection. If detected no action is required. If NOT detected: Alarm is generated. If UPS is turned on with this condition it will turn on in battery mode. When neutral is detected UPS will go back to normal AC mode and alarm will be muted automatically. **CHE:** Works similar to ATO but after neutral is detected UPS will not go to normal AC mode automatically. User action is required to mute alarm and put UPS in normal mode. Manual action is to enter in this menu for selecting CHE value to make a manual neutral search by pressing enter twice. **ATO is pre-configured value at factory.**

- **13: DC battery voltage meter calibration**

Interface	Setting
	Battery DC value indicated on LCD can be calibrated by this function. This function does not changes real battery charger output. Only LCD value. **Parameter 2:** Select "**Add**" or "**Sub**" function to adjust battery voltage to real figure. **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V.

14: Charger output voltage adjustment

Interface	Setting
	**Parameter 2:** you may choose **Add** or **Sub** to adjust charger voltage output **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V. **NOTE:** *Before making voltage adjustment, be sure to disconnect all batteries first to get the accurate charger voltage. *We strongly suggest to use the default value (0). Any modification should be suitable to battery specifications.

- **15: Inverter 1 output voltage adjustment (Note: available after March-2012)**

Interface	Setting
	Parameter 2: you may choose **Add** or **Sub** to adjust inverter1 voltage **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V.

- **16: Inverter 2 output voltage adjustment (Note: available after March-2012)**

Interface	Setting
	Parameter 2: you may choose **Add** or **Sub** to adjust inverter2 voltage **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V.

- **17: FAN Speed Adjustment**

Interface	Setting
	Parameter 2: Indicates always **FAN** **Parameter 3:** **ATO:** It will allow FAN to adjust its speed automatically according to cooling needs. **FUL:** It will force FAN at full speed under any condition. This function must be in **ATO** mode. Any other configuration for service center only.

- **18: AC Voltage Meter Calibration for L1**

Interface	Setting
	AC voltage value for L1 output indicated on LCD can be adjusted by this function. **Parameter 2:** you may choose **Add** (to increase) or **Sub (to reduce)** to adjust inverter1 voltage **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V.

- **19: AC Voltage Meter Calibration for L2**

Interface	Setting
	AC voltage value for L2 output indicated on LCD can be adjusted by this function. **Parameter 2:** you may choose **Add** (to increase) or **Sub (to reduce)** to adjust inverter1 voltage **Parameter 3:** the voltage range is from 0V to 9.9V, the default value is 0V.

12.- ERROR CODES, ALARMS & TROUBLESHOOTING

ERROR / FAILURE CODES ON LCD

When a failure or alarm is detected by the UPS, an alarm or error code is presented in front panel LCD. This code or symbol will allow to identify the problem. In case of failure or alarm, service center must revise the problem.

In Alarm or failure state, UPS shows a numeric code in the LCD. There are some alarm code using similar numbers as failure codes, for example alarm code 02 (input neutral not connected) and failure code 02 (High DC BUS value) so it is important to identify if the situation described is an alarm or a failure.

ALARMS:
Alarms shows Alert symbol blinking in the LCD
Acoustic beep sounds intermittent (not continuous)
Alarms are forced by external situations. Alarms do not mean damage inside the UPS.
Usually, alarm states allow UPS work in normal ONLINE mode. Only few alarm states can block UPS in bypass mode.

ERROR - FAILURES
In a failure state Alert symbol is fixed in LCD (not intermittent)
You will hear a continuous beep (not intermittent)
Failure state usually mean internal damage in the UPS.
Usually UPS goes to BYPASS mode when a failure situation is detected.

WARNING:

**** Some alarms can block UPS avoiding normal operation of UPS until they are reset. Technician must revise original error cause has been solved and then alarm must be reset by simultaneous selection of UP and DOWN keys in front panel meanwhile UPS is in BYPASS mode (connected to AC source previous to select ON command).**

ERROR / FAILURE CODES ON LCD

ERROR CODE	ERROR DESCRIPTION	ICON	BEEP ALARM
01	Bus failure detected when starting		Continuous Beep
02	Hi BUS Voltage		
03	Low BUS Voltage		
04	Bus Unbalanced		
06	Converter Over Current		
11	Inverter soft start failure		
12	Inverter HI voltage		
13	Inverter LOW voltage.		
14	Inverter L1 output short-circuit	SHORT	
15	Inverter L2 output short-circuit	SHORT	
17	L1-L2 Inverter output (line to line) short circuit detected.	SHORT	
1A	L1 Negative Voltage failure		
1B	L2 Negative Voltage failure		
21	Battery SCR Short-Circuit		
24	Inverter Relay Short-Circuit		
29	Battery fuse broken in battery mode		
31	Failure detected in parallel communication		
36	Parallel output unbalanced		
41	HIGH Temperature.		
43	UPS Overload: High power consumption in Watts at UPS output.	OVERLOAD	
46	Not Recognized UPS model. Check jumper configuration in CRTL board.		

ALARM CODES ON LCD

WARNING CODE	WARNING DESCRIPTION
01	Battery unconnected
02	IP Neutral loss or IP L2 fuse broken
07	Battery over charge
08	Low battery
09	Overload
0A	Fan failure
0B	EPO enable
0D	Over temperature
0E	Charger failure
10	L1 IP fuse broken
11	L2 IP fuse broken
21	Different Line setting in parallel UPS
22	Different Bypass setting in parallel UPS
24	Different configuration for Inverter output in parallel UPS
25	Different configuration for frequency in parallel UPS
27	Different configuration for L1 and L2 in parallel UPS
28	Different configuration for phase angle in parallel UPS
33	Locked in bypass after overload 3 times in 30min
34	Converter current unbalance
35	Battery fuse broken
36	Inverter inter-current unbalance
39	Input phase error
3A	Cover of maintain switch is open
3C	Utility extremely unbalanced

ALARM SYMBOLS ON LCD

FLASHING ICON	ALARM DESCRIPTION	BEEP/Sec
LOW BATT.	Low Battery	1 beep / s
OVER LOAD	UPS Overload: High power consumption in Watts at UPS output	2 beep / s
BATT. FAULT	Batteries disconnected	1 beep / s
	Battery Overload	1 beep / s
EP	EPO (emergency power off) activated	1 beep / s
	High Temperature	1 beep / s
	Battery Charger Failure	1 beep / s
	Input Fuse Activated	1 beep / s
	Repetitive Overloads Detected (3 in 30 minutes)	1 beep / s
3F	Parallel Failure (**)	1 beep / s

ACOUSTIC BEEP

Description	Buzzer status	Muted
ESTADO		
Bypass mode	Beeping once every 2 minutes	Yes
Battery mode	Beeping once every 4 seconds	
Fault mode	Beeping continuously	
ALARM / WARNING		
Overload	Beeping twice every second	No
Low battery	Beeping once every second	
Battery unconnected		
Over charge		
EPO enable		
Fan failure/Over temperature		
Charger failure		
IP fuse broken		
Overload 3 times in 30min		
EPO status		
FAILURE / ERROR		
All failures and Error states	Beeping continuously	Yes

TROUBLESHOOTING

PROBLEM DESCRIPTION	PROBABLE ROOT CAUSE	SUGGESTED ACTION
* LCD does not show input voltage value * AC input failure alarm active (1 beep / 4s) however AC input source is OK	Input power cord is not connected	Check input power cord connection.
	Input power cord is connected into UPS outlet.	Check input power cord connection.
UPS cannot be powered on even AC input is OK. Beep alarm (1 beep/s) & LCD shows: ***EP*** ⚠	EPO function is active.	Re-establish emergency power off switch and set UPS in normal mode.
UPS cannot be powered on even AC input is OK.	ON push button is not been selected properly	Push ON button during 2 seconds or longer
1 beep / s alarm is active and LCD shows: ⚠ BATT. FAULT	Internal or external batteries are not properly connected	Check battery connection.
* Code: **02** * 1 beep / s ⚠	Input Neutral not connected or input phase fuse open.	Check input Neutral connection. Reset alarm in parameter 03 on LCD. If input phase fuse is broken replace it.
* Intermittent: ⚠ + OVER LOAD * 2 beeps per second.	UPS overloaded	Disconnect devices from UPS outlets until solving overload
* Intermittent: ⚠ + OVER LOAD * 2 beeps per second. * By-Pass activated	UPS overloaded. UPS has changed to BYPASS mode to avoid internal damage.	Disconnect devices from UPS outlets until solving overload
	After repetitive small overloads, UPS has changed to BYPASS mode.	Disconnect devices from UPS until solving overload. Then power off UPS and re-star it.
* Code **43** * Active: OVER LOAD * Continuous beep	UPS has been automatically powered off because overload.	Disconnect devices from UPS outlets until solving overload. Then power ON.
* Code **14, 15 or 17** * Active: SHORT * Continuous beep	UPS has been automatically powered off because short circuit detected at output.	Check short circuit problem in devices connected to UPS
* Intermittent: ⚠ + ***3F*** * 1 beep / s	Parallel communication lost.	Check parallel cables and PAR 00X text on each LCD. If problem is solved reset alarm with UP and DOWN simultaneous key selection.
* Any of the error codes activated	Probable internal UPS failure.	Contact service center.
Backup time is lower than expected	Batteries are not fully charged or maybe they are worn out.	Let UPS recharge batteries during 6 hours. If it does not solve the problem batteries maybe need to be replaced.

13.- TECHNICAL SPECIFICATIONS

UPS 6K / 10K EX 2PH	6KEX 2Ph	10KEX 2Ph
Capacity / Capacidad	6.000VA / 4.800W	10.000VA / 8.000W
INPUT / ENTRADA		
Input Voltage / Voltaje de Entrada	2 phases / 2 fases 120Vac (L-N + G)	
Input Range / Rango de Entrada	Rated Input / Entrada Nominal: 120 Vac (80Vac-150Vac) +/- 3% @ 100% load (60Vac-150Vac) +/- 3% @ 50% load	
Frequency Range / Rango de Frecuencia	40 - 70 Hz	
Phase / Fases	L1 + L2 +N + G	
Power Factor / Factor de Potencia	> 0.99 @ 100%load	
THDi	< 5% @ 100%load	
Slew Rate / Segumiento de Frecuencia	1 Hz / s	
OUTPUT / SALIDA		
Rated Output	2 phases (L1, L2, N + G): 100/110/115/120/127 Vac L-N	
Voltage Regulation / Regulación de Salida:	+/- 1% (Batt. Mode / Modo Batería)	
Frequency / Frecuencia (Batt. Mode)	50 Hz +/- 0.1 Hz / 60 Hz +/- 0.1 Hz	
Current Crest Ratio / Factor de Cresta	3:1 @ 100% load.	
THDv	< 2% @ Linear Load / Carga Lineal <5 @ No Linear Load / Carga no Lineal	
Transfer Times / Tiempos Transferencia:	0 ms	
Waveform / Forma de Onda	Sine Wave / Sinusoidal Pura	
Power Outlets / Salidas	Terminal Block / Regleta de Conexión	
OVERLOAD / SOBRECARGA		
AC Mode / Modo Normal	100%~110%: 10m / 110%~130%: 1m / >130% : 1s	
Battery Mode / Modo Batería	100%~110%: 30s / 110%~130%: 10s / >130% : 1s	
EFFICIENCY / EFICIENCIA		
Eco Mode / Modo ECO	96%	
AC Mode / Modo AC	90%	
Battery Mode / Modo Batería	88%	
BATTERIES / BATERIAS		
Type and Qty / Tipo y Cantidad		
Internal Battery Pack / baterías Internas	120VDC: 12V/7AH x 20 pcs (2 groups x 10pcs)	120VDC: 12V/9AH x 20 pcs (2 groups x 10pcs)
External batt cabinets / Gabinetes Externos	120VDC: 12V/9AH x 40 pcs => 2 sets in parallel = 2 x (10pcs + 10pcs)	
Typical Recharge T. / T. de Recarga		
Internal Battery Pack / baterías Internas	3.5 H (90%)	4 H (90%)
External batt cabinet / Gabinete Externo	Depending on external battery configuration (depende de cantidad de baterías externas)	
Charging Amps / Corriente de Carga	2.0 A (Max.)	
Charging Voltage / Voltaje del cargador	136.5 Vdc +/- 1%	

UPS 6K / 10K EX 2PH	6KEX 2Ph	10KEX 2Ph
INDICATORS / INDICADORES		
LCD / Pantalla de Cristal Liquido (LCD)	Estado del UPS, Consumo, Baterías, Voltaje Entrada-Salida, Tiempo Descarga, Diagnostico Fallas	
ALARM / ALARMAS		
Acoustic Beep Alarm / Alarma sonora:	For Battery Mode, Low battery, Overload, UPS Failure / Modo Batería, Baja batería, Sobrecargas, Falla	
PRODUCT SIZE & WEIGHT / DIMENSIONES Y PESOS DEL EQUIPO		
D x W x H / Prof. X Ancho X Altura		
UPS (6KEX-2Ph & 10KEX-2Ph)	592x250x576 mm	592x250x826 mm
External batt cabinet / Gabinete Externo Baterías	592x250x576 mm	592x250x576 mm
Net Weight / Peso Neto (kgs)		
UPS (6KEX-2Ph & 10KEX-2Ph)	79	100
External batt cabinet / Gabinete Externo	126 (optional)	126 (optional)
PACKING / EMPAQUE		
D x W x H:		
Individual UPS (6KEX & 10KEX):	Small Pallet: 73x39x82 cm	Small Pallet: 73x39x107 cm
Individual External Battery Cabinet	Small Pallet: 73x39x82 cm	Small Pallet: 73x39x82 cm
Gross Weight / Peso Bruto (kgs)		
UPS (6KEX & 10KEX)	86	109
External Battery Cabinet	126	126
OPERATING / AMBIENTALES		
Humidity / Humedad	<95 % (non-condensing / no condensante)	
Temperature / Temperatura	0-40 ºC	
Noise Level / Ruido Producido	< 50dB @ 1m	< 60dB @ 1m
COMMUNICATION / COMUNICACION		
Smart RS-232 & USB ports	Windows® 98/2000/2003/XP/Vista/2008, Windows® 7, Linux, and MAC	
Intelligent Port (SNMP)	Optional LAN card / Comunicación LAN Ethernet opcional AS400 optional interface board / Interfaz AS400 - opcional	

Specifications can be modified to comply with special project requirements / Las especificaciones pueden modificarse para adaptarse a proyectos especiales

Specifications may change without further notice / Por motivos comerciales o técnicos las especificaciones pueden cambiar sin previo aviso.

EX: included function for connecting external battery cabinets / función básica incluida que permite la conexión de baterías externas originales

2PH: 2 Phases / 2 fases

If CF function is active, UPS output is de-rated to 60& of total original capacity / Si se activa la función CF, la potencia de salida disminuye al 60% de la potencia original

14.- LIMITED WARRANTY

Support: If a failure or problem is detected please check troubleshooting section in user manual. If problem cannot be solved please contact authorized service center or authorized dealer.
Batteries: Rechargeable batteries can be charged and discharged hundreds of times. However they will eventually wear out. This is not a defect or failure so that batteries wear out is not covered by this warranty.
Battery lifetime will depend of operative conditions like working temperature, type and frequency of discharging cycles. Higher the temperature shorter will be the lifetime. Frequent and deep discharging cycles also will short lifetime. For critical applications batteries should be revised and replaced periodically. Long storage (longer than 6 months) without required recharging will wear out batteries. This situation is not covered by this limited warranty since this is not considered as a defect. Check recharging instructions on user manual.
Warranted Products: EPRO series 1K to 10KVA (1 phase or 2 phases models).

Conditions Limited Warranty "PRO11"

1.- Subject to the conditions of this limited warranty, this product is warranted to be free from defects in materials and workmanship at the time of its original purchase by end user.

* In Europe Warranty time is 2 years on electronic parts and 2 years on batteries.
* In America, warranty time is 1 year on electronic parts and 1 year on internal batteries.

Standard warranty times could vary depending on country/region or extended by purchasing warranty options. Please check warranty conditions by country/region in our web www.integra-ups.com.
2.- If during the warranty period, this product fails to operate under normal use and service, due to defects in materials or workmanship, authorized distributor or service center will, at their option, either repair or replace the product in accordance with terms and conditions stipulated herein. Transportation expenses are not covered by this limited warranty.
3.- Warranty is valid only if the original purchasing document issued to original purchaser by authorized distributor or dealer, specifying date of purchase, serial number and name of the dealer, is presented with the product to be revised. INTEGRA and authorized partners reserve the right to refuse warranty service if any of this information has been removed, changed or missing in original purchasing document.
4.- If product is repaired or replaced, repaired or replaced product will be warranted for the remaining time of the original warranty or for 90 days on repaired part from date of repair, whichever is longer.
5.- INTEGRA or their distribution/service partners reserve the right to charge handling fee if returned product is free of failure or it is out of warranty because any of the reasons described in this warranty.
6.- If product is out of warranty a reparation proposal will be sent to the user for his approval. If proposal is not accepted, service center will keep product available for the user during 60 continuous days. After this period product would be disposed and user will not be able to rise any claim.
7.- Rechargeable batteries, like included in this product, will definitively wear out even under normal operation. This is not a defect or failure so it is not covered by this warranty. This warranty does not cover batteries wear out caused by improper or long storage (over 6 months without required recharging indicated in product manual). Even performing recharging procedure this product cannot be storage longer than 18 months. Problems on batteries caused by this kind of long storage are not covered by this warranty.
8.- This warranty does not cover failure caused by inadequate installation or maintenance, misuse, accidents, fire or floods. In these cases warranty will be considered void.
9.- This product can include protection devices like input fuse or input breaker. Activation of this kind of devices is not a failure it is caused by an improper product installation. Input fuse or breaker reset or replacement is not covered by this warranty.
10.- This warranty does not cover damages produced during transportation from user to technical service caused by improper packing of the product by user.
11.- This warranty does not cover product failures caused by installations, modifications or repair performed by non authorized person. If product is open by not authorized technician warranty will be considered void.
12.- Warranty time could be extended as an option depending on market or products. Contact your authorized dealer or www.integra-ups.com for additional information about official warranty extension plans.
13.- Warranty terms and conditions cannot be modified or extended by third parties without written approval of INTEGRA.

Limited Warranty "PRO11"

- INTEGRA does not warrant that the operation of this product will be uninterrupted or error-free during its lifetime. If product fails to work, the maximum liability of INTEGRA under this limited warranty is expressly limited to the lesser of the price you have paid for the product or the cost of repairing or replacement of any hardware components that malfunction in conditions of normal use.
- In no event will INTEGRA be liable for any damages caused by the product or the failure of the product to perform, including any lost profits or savings or special, incidental, or consequential damages. INTEGRA is not liable for any claim made by a third party to INTEGRA or to final user.
- INTEGRA is not responsible for damage that occurs as a result of your failure to follow the instructions intended for this hardware product.

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